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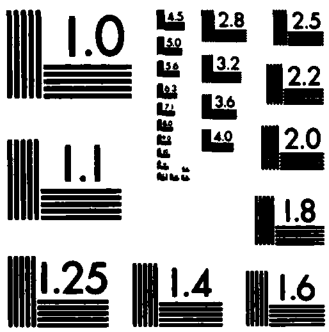
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VOLUME III

USAF ADVANCED TERRESTRIAL ENERGY STUDY

VOLUME III: PARAMETER SURVEY

Institute of Gas Technology
3424 S. State Street
Chicago, Illinois 60616

APRIL 1983

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This report has been reviewed by the Office of Public Affairs (ASD/PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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Fuel Cells	Organic Rankine Cycles	Batteries
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report presents the results of the USAF Advanced Terrestrial Energy Study. The objective of that study was to develop a data base of key parameters of selected energy conversion and energy storage technologies. The data base includes present and expected (through 2000) performance goals of the systems. The data base was established through an extensive literature search, surveys of manufacturers and researchers, and statistical and qualitative analyses of the available input data. The results of the study are reported in four documents.

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INTRODUCTION

This volume of the USAF Advanced Terrestrial Energy Study contains the estimates of specific parameter values for each technology for 1980, 1985, 1990, and 2000 at the following descrete power output levels: 1.5, 5.0, 20.0, 60.0, 100.0, 250.0, 500.0, 750.0, 1000.0, and 5000.0 kW. This parameter survey includes three major sections: one for the energy conversion technologies and two for the energy storage technologies. The output levels for the storage technologies are in terms of energy (kWh) rather than power.

The parameter values listed in this volume were derived from analyses of raw data and therefore represent the expected values of the parameters at those output levels and time periods. The actual value may vary (that is, the performance of a specific design for a specific application). Details on the assumptions made in determining these parameter values are reported in Volume I. The analyses leading to the values listed in this volume are presented in Volume IV along with the expected variance or ranges of parameter values.

The following energy conversion technologies were characterized in this data base:

- Gas Turbines
  - Open cycle, nonrecuperative (nonregenerative)
  - Closed cycle
  - Open cycle, recuperative (regenerative)
- Diesels
  - Turbocompounded
  - Turbocharged
  - Adiabatic
- Stirlings
  - Free piston
  - Kinematic
- Organic Rankine Cycles
- Fuel Cells

- Phosphoric acid
- Solid polymer electrolyte (SPE)
- Molten carbonate

- Photovoltaics
  - Flat plate
  - Actively cooled
  - Photochemical
- Wind Turbines
  - Vertical axis
  - Horizontal axis.

The following energy storage technologies were characterized in this data base:

- Batteries
  - Zn/Cl_2
  - Zn/Br_2
  - Ni/Fe
  - $Li\text{-}Al/FeS_2$
  - Na/S
  - Advanced sealed lead/acids
  - Redox Cr-Fe
- Thermal Energy Storage Devices
  - $CaCl_2 \cdot 6H_2O$, calcium chloride hexahydrate
  - $Na_2SO_4 \cdot 10H_2O$, sodium sulfate decahydrate (Glauber's salt)
  - $Na_2S_2O_3 \cdot 5H_2O$, sodium thiosulfate pentahydrate
  - Olivine ceramic brick
  - Magnesite ceramic brick
  - Form-stable polyethylene.

The complete set of parameters and their definitions follow.

- Type. This parameter value is either mobile, transportable, or fixed; it refers to the complete energy system, not just the component technology.

  A system is mobile if it 1) is transportable by truck or aircraft and 2) can be assembled or dismantled within 8 hours with no prior site preparation. A system is transportable by truck if the system itself or the largest component of the system can be broken down and does not exceed the dimensions of 10-feet wide by 13-feet high by 60-feet long. For air transportability, the system or largest component of the system cannot exceed 16-feet wide by 9-feet high by 100-feet long, nor can it exceed a weight limit of 350 lb/ft^2 floor loading.

  A system is transportable if it 1) is transportable by truck or aircraft subject to the same limitations as mobile and 2) can be set up or removed within 1 week with only minor site preparation.

  A system that is neither mobile nor transportable is fixed.

- Fuel Capability. Fuel capability indicates the fuels that can provide the primary energy source for each system. Primary fuels for the purpose of this study include —

  - JP-4
  - Diesel (DF-1 or DF-2)
  - Electricity
  - Natural gas
  - Solar
  - Wind
  - Thermal (heat)
  - Methanol

Systems that have multifuel capabilities are denoted "multi."

- System Acquisition Cost. The estimated total installed cost in 1980 dollars of the energy system excluding land procurement.

- Acquisition Cost (except BOP). The estimated off-the-shelf cost of the component technology excluding the balance-of-plant components for the complete system. The cost is in 1980 dollars.

- Annual Operating and Maintenance Cost. The estimated annual cost of operating the energy system. The cost is in 1980 dollars and includes all operating and maintenance expenses except for fuel costs.

- System Efficiency. A system's efficiency is the primary energy output

divided by the primary fuel energy input. It does not include the energy content of by-product energy recovery unless specifically noted. Efficiency is measured in percent.

- Efficiency (except BOP). This is the efficiency of the component technology and is the direct energy output from the component technology (for example, shaft power for the engine) divided by the energy content of the fuel for the technology. This efficiency is based on the energy balance around the component technology and excludes all balance-of-plant components and by-product energy. Efficiency is measured in percent.

- Lifetime. This is the estimated number of years the energy system is expected to produce its designated output during continuous operation. Continuous operation is as previously defined under "General Requirements."

- Annual Fuel Consumption. This is the calculated annual energy content of designated fuel consumed by the energy system at its designated output during continuous operation. It is measured in Btu's unless otherwise specified.

- Annual Fuel Cost. This is the calculated annual cost of primary fuel. It is the product of the primary fuel price in 1980 dollars times the annual fuel consumption for the energy system. Fuel prices are discussed in the section of this report headed "Fuels and Fuel Prices." Selection of one fuel type for systems with multifuel capability is discussed in the section of this report headed "General Requirements."

- Annual Fuel Cost (5%). This is the calculated annual cost of primary fuel assuming a real price increase of 5% per year. It is measured in 1980 dollars.

- Annual Fuel Cost (10%). This is the calculated annual cost of primary fuel assuming a real price increase of 10% per year. It is measured in 1980 dollars.

- Life-Cycle Cost. Life-cycle cost is the calculated cost of acquiring, operating (including fuel use), and maintaining the energy system at continuous operation at its output level for a period of 20 years. For systems with lifetimes of less than 20 years, the cost of rebuilding or reacquiring a system to extend the life to 20 years is included. The life-cycle cost is measured in 1980 dollars per unit of energy output. The procedure for calculating life-cycle costs is discussed in the section of this report headed "Life-Cycle Costing Analysis."

- Life-Cycle Cost (5%). This is the life-cycle cost of the energy system as previously defined except that fuel costs are assumed to be based on a 5% per year real price increase. It is measured in 1980 dollars per unit of energy output.

- Life-Cycle Cost (10%). This is the life-cycle cost of the energy system as previously defined except that fuel costs are assumed to be based on a 10% per year real price increase. It is measured in 1980 dollars per unit of energy output.

- Start-up Time. The start-up time is the elapsed time in minutes for the system to achieve full output from a "ready to start" or "cold start" condition.

- Shutdown Time. The shutdown time is the elapsed time in minutes to bring a system from a full output condition to an off or standby mode.

- Volume (System). This is the volume in cubic feet of the envelope of the installed energy system.

- Volume (except BOP). This is the volume in cubic feet of the component technology excluding all balance-of-plant components.

- Area (System). This is the land or surface area in square feet required for the installed energy system.

- Area (except BOP). This is the land or surface area in square feet required for the energy technology excluding all balance-of-plant components.

- Weight. This is the total weight of the complete energy system measured in pounds.

- Weight (except BOP). This is the weight in pounds for the energy technology excluding all balance-of-plant components.

- Raw Materials. This is a qualitative parameter to indicate whether each system requires any materials that may not be readily available in sufficient quantity to allow the system to be produced in large quantities. This parameter is measured on an ordinal scale:

  1 — definite raw materials limitations

  3 — potential raw materials limitations

  5 — no apparent raw materials limitation

- Reliability. This is a qualitative parameter that indicates the potential for unanticipated outages of the energy system. Reliability is evaluated in terms of moving parts, operating temperature, modularity (redundancy), stress levels, corrosion, etc. Reliability is measured on ordinal scale:

  1 — high potential unreliability

  2 — moderate potential unreliability

  3 — average

  4 — moderate reliability

  5 — high reliability

- Environmental Constraints. This is a qualitative parameter that indicates the potential for environmental insult from the energy system. This

parameter is evaluated in terms of thermal discharge; air pollution, including CO, NO_x, SO_x, HC, particulates, and others; noise; odor; solid waste; and chemical waste. Environmental constraint is measured on an ordinal scale:

1 — extreme potential environmental constraint

2 — high potential environmental constraint

3 — average potential environmental constraint

4 — moderate potential environmental constraint

5 — minimum potential environmental constraint

- Locational Constraints. This is a qualitative parameter to indicate the potential for locational constraints that could limit the applicability of the energy systems. This parameter is evaluated in terms of water requirements, personnel requirements, fuel availability, fuel storage, and others (solar, wind). Locational constraints are measured on an ordinal scale:

1 — extreme potential locational constraints

2 — high potential locational constraints

3 — average locational constraints

4 — moderate locational constraints

5 — minimum locational constraints

- Operational Constraints. This is a qualitative parameter that indicates the turn-down and load-following capabilities of the system relative to operating efficiency. This parameter is evaluated in terms of part-load capability, overload capability, and load-following capability. Operational constraints are measured on an ordinal scale:

1 — no turn-down capability

2 — turn-down capability with high efficiency penalty

3 — average turn-down capability

4 — moderate turn-down capability; moderate efficiency penalty

5 — excellent turn-down capability; minor efficiency penalty

- Thermal Energy Available. The thermal energy recoverable from any energy system is a function of the quality and quantity of thermal energy produced by the system. It would be beyond the scope of this study to estimate the thermal energy available from each technology at the 11 different output levels. Consequently, this parameter will be qualitative and measured on an ordinal scale:

1 — no potential for heat recovery

2 — minor potential for heat recovery, extreme use limitation

3 — potential for heat recovery, moderate use limitation

4 — moderate potential for heat recovery, minor use limitations

5 — very high potential for usable heat recovery

CONVERSION DEVICE PARAMETERS

This section presents the parameter values for the gas turbines, diesel engines, Stirling engines, fuel cells, photovoltaics, and wind turbines. All systems were evaluated on the basis of continuous production of utility-quality ac power (operating 90% of each year at the required power output level).

The parameter "lifetime" is not included in the parameter survey for the conversion technologies because all of the systems are evaluated on a 20-year economic life.

PARAMETER: TYPE UNITS: MOBILE/TRANSPORTAPLE/FIXED

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
		REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	T	F	NCA	F	F
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	M	M	NCA	NCA	M	F	NCA	F	F
	1990	NCA	NCA	NCA	NCA	NCA	NCA	M	M	M	M	NCA	NCA	M	F	NCA	F	F
	2000	NCA	NCA	NCA	NCA	NCA	NCA	M	M	M	M	NCA	M	M	F	T	F	F
5.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	NCA	NCA	NCA	F	F	NCA	F	F
	1985	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	M	NCA	NCA	F	F	NCA	F	F
	1990	NCA	NCA	NCA	NCA	M	NCA	M	M	M	M	NCA	NCA	F	F	NCA	F	F
	2000	NCA	NCA	NCA	NCA	M	NCA	M	M	M	M	NCA	M	F	F	F	F	F
20.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	NCA	NCA	NCA	F	F	NCA	NCA	F
	1985	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	M	NCA	NCA	F	F	NCA	F	F
	1990	NCA	NCA	NCA	NCA	M	NCA	NCA	M	M	M	NCA	NCA	F	F	NCA	F	F
	2000	NCA	NCA	NCA	NCA	M	NCA	M	M	M	M	NCA	M	F	F	F	F	F
30.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	NCA	NCA	NCA	F	F	NCA	NCA	F
	1985	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	M	NCA	NCA	F	F	NCA	F	F
	1990	NCA	NCA	NCA	NCA	M	NCA	NCA	M	M	M	NCA	NCA	F	F	NCA	F	F
	2000	NCA	NCA	NCA	NCA	M	NCA	NCA	M	M	M	NCA	M	F	F	F	F	F
60.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	NCA	NCA	NCA	F	NCA	NCA	NCA	F
	1985	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	M	NCA	NCA	F	F	NCA	NCA	F
	1990	NCA	NCA	NCA	NCA	M	NCA	NCA	M	M	M	NCA	NCA	F	F	NCA	F	F
	2000	NCA	NCA	M	NCA	M	NCA	NCA	M	M	M	NCA	NCA	F	F	NCA	F	F
100.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	M	NCA	NCA	NCA	F	NCA	NCA	NCA	F
	1985	NCA	NCA	NCA	M	M	NCA	NCA	NCA	M	T	NCA	NCA	F	F	NCA	NCA	F
	1990	M	NCA	M	M	M	NCA	NCA	M	M	T	NCA	NCA	F	F	NCA	NCA	F
	2000	M	NCA	M	M	M	NCA	NCA	M	M	T	NCA	NCA	F	F	NCA	F	F
250.0	1980	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	F
	1985	NCA	NCA	NCA	M	M	NCA	NCA	NCA	T	NCA	NCA	NCA	F	F	NCA	NCA	F
	1990	M	NCA	M	M	M	M	NCA	T	M	T	T	NCA	F	F	NCA	NCA	F
	2000	M	NCA	M	M	M	M	NCA	M	M	T	T	NCA	F	F	NCA	NCA	F
500.0	1980	NCA	NCA	M	NCA	M	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	M	M	M	NCA	NCA	NCA	T	NCA	NCA	NCA	F	NCA	NCA	NCA	F
	1990	M	NCA	M	M	M	M	NCA	T	T	F	F	NCA	F	F	NCA	NCA	F
	2000	M	NCA	M	M	M	M	NCA	M	M	F	F	NCA	F	F	NCA	NCA	F
750.0	1980	NCA	NCA	M	NCA	M	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	M	M	M	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	F
	1990	T	NCA	M	M	M	M	NCA	NCA	T	F	NCA	NCA	F	F	NCA	NCA	F
	2000	T	NCA	M	M	M	M	NCA	T	T	F	F	NCA	F	F	NCA	NCA	F
1000.0	1980	NCA	NCA	T	NCA	T	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	T	T	T	T	T	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	T	T	T	T	T	T	NCA	NCA	T	F	NCA	NCA	F	NCA	NCA	NCA	F
	2000	T	T	T	T	T	T	NCA	T	T	F	F	NCA	F	F	NCA	NCA	F
5000.0	1980	T	NCA	T	NCA	T	NCA	NCA	NCA	F	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	T	T	T	T	T	NCA	NCA	NCA	T	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	T	T	T	T	T	T	NCA	NCA	T	F	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	T	T	T	T	T	T	NCA	NCA	T	F	F	NCA	F	NCA	NCA	NCA	NCA

PARAMETER: FUEL CAPABILITY UNITS: MULTIPLE (M)/DIESEL (D)/SOLAR (S) WIND (W)

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	M	NCA	NCA	NCA	S	S	NCA	W	W
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	M	M	NCA	NCA	S	S	NCA	W	W
	1990	NCA	NCA	NCA	NCA	NCA	NCA	M	M	M	M	NCA	NCA	S	S	NCA	W	W
	2000	NCA	NCA	NCA	NCA	NCA	NCA	M	M	M	M	NCA	M	S	S	S	W	W
5.0	1980	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	S	NCA	W	W
	1985	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	M	NCA	NCA	S	S	NCA	W	W
	1990	NCA	NCA	NCA	NCA	D	NCA	M	M	M	M	NCA	NCA	S	S	NCA	W	W
	2000	NCA	NCA	NCA	NCA	D	NCA	M	M	M	M	NCA	M	S	S	S	W	W
20.0	1980	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	S	NCA	NCA	W
	1985	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	M	NCA	NCA	S	S	NCA	W	W
	1990	NCA	NCA	NCA	NCA	D	NCA	NCA	M	M	M	NCA	NCA	S	S	NCA	W	W
	2000	NCA	NCA	NCA	NCA	D	NCA	M	M	M	M	NCA	M	S	S	S	W	W
30.0	1980	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	S	NCA	NCA	W
	1985	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	M	NCA	NCA	S	S	NCA	W	W
	1990	NCA	NCA	NCA	NCA	D	NCA	NCA	M	M	M	NCA	NCA	S	S	NCA	W	W
	2000	NCA	NCA	NCA	NCA	D	NCA	NCA	M	M	M	NCA	M	S	S	S	W	W
60.0	1980	NCA	NCA	NCA	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	NCA	NCA	NCA	W
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	1985	NCA	NCA	NCA	D	D	NCA	NCA	NCA	M	M	NCA	NCA	S	S	NCA	NCA	W
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	2000	M	NCA	M	D	D	NCA	NCA	M	M	M	NCA	NCA	S	S	NCA	W	W
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	1985	NCA	NCA	NCA	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	S	NCA	NCA	W
	1990	M	NCA	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
	2000	M	NCA	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
500.0	1980	NCA	NCA	M	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	M	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	S	NCA	NCA	NCA	W
	1990	M	NCA	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
	2000	M	NCA	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
750.0	1980	NCA	NCA	M	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	M	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	W
	1990	M	NCA	M	D	D	D	NCA	M	M	M	NCA	NCA	S	S	NCA	NCA	W
	2000	M	NCA	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
1000.0	1980	NCA	NCA	M	NCA	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	M	M	M	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	M	M	M	D	D	D	NCA	NCA	M	M	NCA	NCA	S	NCA	NCA	NCA	W
	2000	M	M	M	D	D	D	NCA	M	M	M	M	NCA	S	S	NCA	NCA	W
5000.0	1980	M	NCA	M	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	M	M	M	D	D	NCA	NCA	NCA	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	M	M	M	[illegible]	D	D	NCA	NCA	M	M	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	M	M	M	[illegible]	D	D	NCA	NCA	M	M	M	NCA	S	NCA	NCA	NCA	NCA

PARAMETER: SYSTEM ACQUISITION COST UNITS: 1980 DOLLARS

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.76E03	NCA	NCA	NCA	2.84E05	4.15E05	NCA	3.54E04	3.54E04
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.76E03	2.25E03	NCA	NCA	2.45E05	3.57E05	NCA	3.36E04	3.36E04
	1990	NCA	NCA	NCA	NCA	NCA	NCA	1.35E03	1.35E03	1.76E03	1.50E03	NCA	NCA	2.07E05	3.03E05	NCA	3.17E04	3.17E04
	2000	NCA	NCA	NCA	NCA	NCA	NCA	1.35E03	1.35E03	1.76E03	9.00E02	NCA	1.28E03	2.07E05	3.03E05	2.07E05	3.17E04	3.17E04
5.0	1980	NCA	NCA	NCA	NCA	4.82E03	NCA	NCA	NCA	4.40E03	NCA	NCA	NCA	9.48E05	1.38E06	NCA	7.41E04	7.41E04
	1985	NCA	NCA	NCA	NCA	4.82E03	NCA	NCA	NCA	4.40E03	7.50E03	NCA	NCA	8.15E05	1.19E06	NCA	7.04E04	7.04E04
	1990	NCA	NCA	NCA	NCA	5.30E03	NCA	4.50E03	4.50E03	4.40E03	5.00E03	NCA	NCA	6.92E05	1.01E06	NCA	6.67E04	6.67E04
	2000	NCA	NCA	NCA	NCA	5.30E03	NCA	4.50E03	4.50E03	4.40E03	3.00E03	NCA	4.25E03	6.92E05	1.01E06	6.92E05	6.67E04	6.67E04
20.0	1980	NCA	NCA	NCA	NCA	2.32E04	NCA	NCA	NCA	1.27E04	NCA	NCA	NCA	3.79E06	5.54E06	NCA	NCA	2.00E05
	1985	NCA	NCA	NCA	NCA	2.32E04	NCA	NCA	NCA	1.27E04	3.00E04	NCA	NCA	3.26E06	4.76E06	NCA	1.90E05	1.90E05
	1990	NCA	NCA	NCA	NCA	2.55E04	NCA	NCA	1.20E04	1.27E04	2.00E04	NCA	NCA	2.77E06	4.04E06	NCA	1.80E05	1.80E05
	2000	NCA	NCA	NCA	NCA	2.55E04	NCA	1.20E04	1.20E04	1.27E04	1.20E04	NCA	1.70E04	2.77E06	4.04E06	2.77E06	1.80E05	1.80E05
30.0	1980	NCA	NCA	NCA	NCA	3.88E04	NCA	NCA	NCA	1.74E04	NCA	NCA	NCA	5.69E06	8.31E06	NCA	NCA	2.75E05
	1985	NCA	NCA	NCA	NCA	3.88E04	NCA	NCA	NCA	1.74E04	4.50E04	NCA	NCA	4.89E06	7.15E06	NCA	2.61E05	2.61E05
	1990	NCA	NCA	NCA	NCA	4.27E04	NCA	NCA	1.65E04	1.74E04	3.00E04	NCA	NCA	4.10E06	5.98E06	NCA	2.48E05	2.48E05
	2000	NCA	NCA	NCA	NCA	4.27E04	NCA	NCA	1.65E04	1.74E04	1.80E04	NCA	2.55E04	4.10E06	5.98E06	4.10E06	2.48E05	2.48E05
60.0	1980	NCA	NCA	NCA	NCA	1.01E05	NCA	NCA	NCA	3.03E04	NCA	NCA	NCA	1.14E07	NCA	NCA	NCA	4.86E05
	1985	NCA	NCA	NCA	NCA	1.01E05	NCA	NCA	NCA	3.03E04	9.00E04	NCA	NCA	9.81E06	1.43E07	NCA	NCA	4.62E05
	1990	NCA	NCA	NCA	NCA	1.11E05	NCA	NCA	3.00E04	3.03E04	6.00E04	NCA	NCA	8.32E06	1.20E07	NCA	4.37E05	4.37E05
	2000	NCA	NCA	4.11E04	NCA	1.11E05	NCA	NCA	3.00E04	3.03E04	3.60E04	NCA	NCA	8.32E06	1.20E07	NCA	4.37E05	4.37E05
100.0	1980	NCA	NCA	NCA	NCA	2.22E05	NCA	NCA	NCA	4.65E04	NCA	NCA	NCA	1.90E07	NCA	NCA	NCA	7.55E05
	1985	NCA	NCA	NCA	3.55E05	2.22E05	NCA	NCA	NCA	4.65E04	1.50E05	NCA	NCA	1.63E07	2.38E07	NCA	NCA	7.17E05
	1990	6.36E04	NCA	6.06E04	3.91E05	2.44E05	NCA	NCA	5.00E04	4.65E04	1.00E05	NCA	NCA	1.37E07	1.99E07	NCA	NCA	6.49E05
	2000	6.36E04	NCA	6.06E04	3.91E05	2.44E05	NCA	NCA	5.00E04	4.65E04	6.0E04	NCA	NCA	1.37E07	1.99E07	NCA	6.49E05	6.49E05
250.0	1980	NCA	NCA	NCA	NCA	4.80E05	NCA	NCA	NCA	1.07E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.72E06
	1985	NCA	NCA	NCA	7.68E05	4.80E05	NCA	NCA	NCA	1.07E05	NCA	NCA	NCA	4.08E07	5.95E07	NCA	NCA	1.63E06
	1990	1.28E05	NCA	1.22E05	8.45E05	5.28E05	7.61E05	NCA	1.25E05	1.07E05	2.25E05	2.50E05	NCA	3.41E07	4.98E07	NCA	NCA	1.55E06
	2000	1.28E05	NCA	1.22E05	8.45E05	5.28E05	7.61E05	NCA	1.25E05	1.07E05	1.25E05	1.25E05	NCA	3.41E07	4.98E07	NCA	NCA	1.55E06
500.0	1980	NCA	NCA	2.06E05	NCA	8.46E05	NCA	NCA	NCA	2.13E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.06E05	1.35E06	8.46E05	NCA	NCA	NCA	2.13E05	NCA	NCA	NCA	8.15E07	NCA	NCA	NCA	3.26E06
	1990	2.16E05	NCA	2.06E05	1.49E06	9.31E05	1.34E06	NCA	2.21E05	2.13E05	2.50E05	3.00E05	NCA	6.83E07	1.01E08	NCA	NCA	3.10E06
	2000	2.16E05	NCA	2.06E05	1.49E06	9.31E05	1.34E06	NCA	2.21E05	2.13E05	2.00E05	2.00E05	NCA	6.83E07	1.01E08	NCA	NCA	3.10E06
750.0	1980	NCA	NCA	2.81E05	NCA	1.17E06	NCA	NCA	NCA	3.27E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.81E05	1.87E06	1.17E06	NCA	NCA	NCA	3.27E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	4.89E06
	1990	2.95E05	NCA	2.81E05	2.06E06	1.29E06	1.83E06	NCA	NCA	3.27E05	3.75E05	NCA	NCA	1.04E08	1.50E08	NCA	NCA	4.65E06
	2000	2.95E05	NCA	2.81E05	2.06E06	1.29E06	1.83E06	NCA	3.31E05	3.27E05	3.00E05	3.00E05	NCA	1.04E08	1.50E08	NCA	NCA	4.65E06
1000.0	1980	NCA	NCA	3.50E05	NCA	1.47E06	NCA	NCA	NCA	4.49E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3.68E05	3.85E05	3.50E05	2.35E06	1.47E06	NCA	NCA	NCA	4.49E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3.68E05	3.85E05	3.50E05	2.59E06	1.62E06	2.33E06	NCA	NCA	4.49E05	5.00E05	NCA	NCA	1.37E08	NCA	NCA	NCA	6.20E06
	2000	3.68E05	3.85E05	3.50E05	2.59E06	1.62E06	2.33E06	NCA	4.41E05	4.49E05	4.00E05	4.00E05	NCA	1.37E08	1.99E08	NCA	NCA	6.20E06
5000.0	1980	1.26E06	NCA	1.20E06	NCA	4.70E06	NCA	NCA	NCA	2.97E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.26E06	1.32E06	1.20E06	7.52E06	4.70E06	NCA	NCA	NCA	2.97E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.26E06	1.32E06	1.20E06	8.27E06	5.17E06	7.45E06	NCA	NCA	2.97E06	2.50E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.26E06	1.32E06	1.20E06	8.27E06	5.17E06	7.45E06	NCA	NCA	2.97E06	2.0E06	2.00E06	NCA	6.83E08	NCA	NCA	NCA	NCA

PARAMETER: ACQUISITION COST (ex. B.O.P.) UNITS: 1980 DOLLARS

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.58E03	NCA	NCA	NCA	1.21E05	1.45E05	NCA	1.73E04	1.73E04
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.58E03	5.68E02	NCA	NCA	9.07E04	1.09E05	NCA	1.64E04	1.64E04
	1990	NCA	NCA	NCA	NCA	NCA	NCA	3.75E02	3.75E02	1.58E03	3.75E02	NCA	NCA	6.05E04	7.25E04	NCA	1.56E04	1.56E04
	2000	NCA	NCA	NCA	NCA	NCA	NCA	3.75E02	3.75E02	1.58E03	2.25E02	NCA	6.0E02	6.05E04	7.25E04	6.05E04	1.48E04	1.48F04
5.0	1980	NCA	NCA	NCA	NCA	1.43E03	NCA	NCA	NCA	3.96E03	NCA	NCA	NCA	4.05E05	4.82E05	NCA	2.87F04	2.87E04
	1985	NCA	NCA	NCA	NCA	1.43E03	NCA	NCA	NCA	3.95E03	1.88E03	NCA	NCA	3.04E05	3.62E05	NCA	2.73E04	2.73E04
	1990	NCA	NCA	NCA	NCA	1.57E03	NCA	1.25E03	1.25E03	3.96E03	1.25E03	NCA	NCA	2.03E05	2.41E05	NCA	2.59E04	2.59E04
	2000	NCA	NCA	NCA	NCA	1.57E03	NCA	1.25E03	1.25E03	3.96E03	7.5E02	NCA	2.0E03	2.03E05	2.41E05	2.03E05	2.46E04	2.46E04
20.0	1980	NCA	NCA	NCA	NCA	4.49E03	NCA	NCA	NCA	1.14E04	NCA	NCA	NCA	1.62E06	1.93E06	NCA	NCA	5.14E04
	1985	NCA	NCA	NCA	NCA	4.49E03	NCA	NCA	NCA	1.14E04	7.5E03	NCA	NCA	1.22E06	1.45E06	NCA	4.89E04	4.89E04
	1990	NCA	NCA	NCA	NCA	4.94E03	NCA	NCA	5.0E03	1.14E04	5.0E03	NCA	NCA	8.12E05	9.65E05	NCA	4.64E04	4.64E04
	2000	NCA	NCA	NCA	NCA	4.94E03	NCA	5.0E03	5.0E03	1.14E04	3.0E03	NCA	8.0E03	8.12E05	9.65E05	8.12E03	4.41E04	4.41E04
30.0	1980	NCA	NCA	NCA	NCA	6.49E03	NCA	NCA	NCA	1.57E04	NCA	NCA	NCA	2.43E06	2.89E06	NCA	NCA	6.10E04
	1985	NCA	NCA	NCA	NCA	6.49E03	NCA	NCA	NCA	1.57E04	1.13E04	NCA	NCA	1.83E06	2.17E06	NCA	5.79E04	5.79E04
	1990	NCA	NCA	NCA	NCA	7.14E03	NCA	NCA	7.50E03	1.57E04	7.5E03	NCA	NCA	1.22E06	1.45E06	NCA	5.50E04	5.50E04
	2000	NCA	NCA	NCA	NCA	7.14E03	NCA	NCA	7.50E03	1.57E04	4.5E03	NCA	1.2E04	1.22E06	1.45E06	1.22E06	5.23E04	5.23E04
60.0	1980	NCA	NCA	NCA	NCA	1.31E04	NCA	NCA	NCA	2.73E04	NCA	NCA	NCA	4.86E06	NCA	NCA	NCA	8.16E04
	1985	NCA	NCA	NCA	NCA	1.31E04	NCA	NCA	NCA	2.73E04	2.25E04	NCA	NCA	3.65E06	4.34E06	NCA	NCA	7.76E04
	1990	NCA	NCA	NCA	NCA	1.44E04	NCA	NCA	1.50E04	2.73E04	1.50E04	NCA	NCA	2.43E06	2.89E06	NCA	7.37E04	7.37E04
	2000	NCA	NCA	3.70E04	NCA	1.44E04	NCA	NCA	1.50E04	2.73E04	9.0E03	NCA	NCA	2.43E06	2.89E06	NCA	7.00E04	7.00E04
100.0	1980	NCA	NCA	NCA	NCA	2.41E04	NCA	NCA	NCA	4.18E04	NCA	NCA	NCA	8.10E06	NCA	NCA	NCA	1.01E05
	1985	NCA	NCA	NCA	3.86E04	2.41E04	NCA	NCA	NCA	4.18E04	3.75E04	NCA	NCA	6.08E06	7.23E06	NCA	NCA	9.61E04
	1990	5.45E04	NCA	5.45E04	4.24E04	2.65E04	NCA	NCA	2.50E04	4.18E04	2.5E04	NCA	NCA	4.05E06	4.82E06	NCA	NCA	9.13E04
	2000	5.45E04	NCA	5.45E04	4.24E04	2.65E04	NCA	NCA	2.50E04	4.18E04	1.5E04	NCA	NCA	4.05E06	4.82E06	NCA	8.68E04	9.68E04
250.0	1980	NCA	NCA	NCA	NCA	4.33E04	NCA	NCA	NCA	9.10E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.49E05
	1985	NCA	NCA	NCA	6.93E04	4.33E04	NCA	NCA	NCA	9.10E04	NCA	NCA	NCA	1.52E07	1.81E07	NCA	NCA	1.41E05
	1990	1.10E05	NCA	1.10E05	7.62E04	4.76E04	6.86E04	NCA	6.25E04	9.10E04	5.63E04	5.0E04	NCA	1.01E07	1.21E07	NCA	NCA	1.34E05
	2000	1.10E05	NCA	1.10E05	7.62E04	4.76E04	6.86E04	NCA	6.25E04	9.10E04	3.13E4	2.5E04	NCA	1.01E07	1.21E07	NCA	NCA	1.28E05
500.0	1980	NCA	NCA	1.85E05	NCA	8.40E04	NCA	NCA	NCA	1.62E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.85E05	1.34E05	8.40E04	NCA	NCA	NCA	1.62E05	NCA	NCA	NCA	3.04E07	NCA	NCA	NCA	2.82E05
	1990	1.85E05	NCA	1.85E05	1.48E05	9.24E04	1.33E05	NCA	1.11E05	1.62E05	6.25E04	6.0E04	NCA	2.03E07	2.41E07	NCA	NCA	2.68E05
	2000	1.85E05	NCA	1.85E05	1.48E05	9.24E04	1.33E05	NCA	1.11E05	1.62E05	5.0E04	4.0E04	NCA	2.03E07	2.41E07	NCA	NCA	2.56E05
750.0	1980	NCA	NCA	2.53E05	NCA	1.37E05	NCA	NCA	NCA	2.26E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.53E05	2.19E05	1.37E05	NCA	NCA	NCA	2.26E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	4.23E05
	1990	2.53E05	NCA	2.53E05	2.41E05	1.51E05	2.17E05	NCA	NCA	2.26E05	9.38E04	NCA	NCA	3.04E07	3.62E07	NCA	NCA	3.93E05
	2000	2.53E05	NCA	2.53E05	2.41E05	1.51E05	2.17E05	NCA	1.66E05	2.26E05	7.5E04	6.0E04	NCA	3.04E07	3.62E07	NCA	NCA	3.84E05
1000.0	1980	NCA	NCA	3.15E05	NCA	2.03E05	NCA	NCA	NCA	2.78E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3.15E05	3.47E05	3.15E05	3.25E05	2.03E05	NCA	NCA	NCA	2.78E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3.15E05	3.47E05	3.15E05	3.57E05	2.23E05	3.21E05	NCA	NCA	2.78E05	1.25E05	NCA	NCA	4.05E7	NCA	NCA	NCA	5.36E05
	2000	3.15E05	3.47E05	3.15E05	3.57E05	2.23E05	3.21E05	NCA	2.21E05	2.78E05	1.0E05	8.0E04	NCA	4.05E7	4.82E07	NCA	NCA	5.12E05
5000.0	1980	1.08E06	NCA	1.08E06	NCA	2.19E06	NCA	NCA	NCA	1.60E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.08E06	1.19E06	1.08E06	3.50E06	2.19E06	NCA	NCA	NCA	1.60E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.08E06	1.19E06	1.08E06	3.85E06	2.41E06	3.47E05	NCA	NCA	1.60E06	6.25E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.08E06	1.19E06	1.08E06	3.85E06	2.41E06	3.47E05	NCA	NCA	1.60E06	5.13E4	4.0E05	NCA	2.03E08	NCA	NCA	NCA	NCA

PARAMETER: ANNUAL O&M COSTS UNITS: 1980 DOLLARS

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.94E02	NCA	NCA	NCA	1.81E04	2.60E04	NCA	1.81E03	1.81E03
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.94E02	2.25E02	NCA	NCA	1.54E04	2.22E04	NCA	1.42E03	1.42E03
	1990	NCA	NCA	NCA	NCA	NCA	NCA	6.75E01	6.75E01	2.94E02	1.50E02	NCA	NCA	1.32E04	1.89E04	NCA	1.38E03	1.38E03
	2000	NCA	NCA	NCA	NCA	NCA	NCA	6.75E01	6.75E01	2.94E02	9.00E01	NCA	1.28E02	1.32E04	1.89E04	1.32E04	1.38E03	1.38E03
5.0	1980	NCA	NCA	NCA	NCA	1.21E02	NCA	NCA	NCA	1.10E03	NCA	NCA	NCA	6.05E04	8.66E04	NCA	5.15E03	5.15E03
	1985	NCA	NCA	NCA	NCA	1.21E02	NCA	NCA	NCA	1.10E03	7.50E02	NCA	NCA	5.14E04	7.39E04	NCA	3.91E03	3.91E03
	1990	NCA	NCA	NCA	NCA	1.33E02	NCA	2.25E02	2.25E02	1.10E03	5.00E02	NCA	NCA	4.40E04	6.31E04	NCA	3.83E03	3.83E03
	2000	NCA	NCA	NCA	NCA	1.33E02	NCA	2.25E02	2.25E02	1.10E03	3.00E02	NCA	4.25E02	4.40E04	6.31E04	4.40E04	3.83E03	3.83E03
20.0	1980	NCA	NCA	NCA	NCA	3.78E02	NCA	NCA	NCA	1.27E03	NCA	NCA	NCA	2.42E05	3.47E05	NCA	NCA	1.87E04
	1985	NCA	NCA	NCA	NCA	3.78E02	NCA	NCA	NCA	1.27E03	3.00E03	NCA	NCA	2.06E05	2.96E05	NCA	1.38E04	1.38E04
	1990	NCA	NCA	NCA	NCA	4.16E02	NCA	NCA	6.00E02	1.27E03	2.00E03	NCA	NCA	1.76E05	2.52E05	NCA	1.36E04	1.36E04
	2000	NCA	NCA	NCA	NCA	4.16E02	NCA	6.00E02	6.00E02	1.27E03	1.20E03	NCA	1.70E03	1.76E05	2.52E05	1.76E05	1.36E04	1.36E04
30.0	1980	NCA	NCA	NCA	NCA	5.47E02	NCA	NCA	NCA	1.74E03	NCA	NCA	NCA	3.63E05	5.21E05	NCA	NCA	2.76E04
	1985	NCA	NCA	NCA	NCA	5.47E02	NCA	NCA	NCA	1.74E03	4.50E03	NCA	NCA	3.08E05	4.44E05	NCA	2.02E04	2.02E04
	1990	NCA	NCA	NCA	NCA	6.02E02	NCA	NCA	8.25E02	1.74E03	3.00E03	NCA	NCA	2.61E05	3.74E05	NCA	1.99E04	1.99E04
	2000	NCA	NCA	NCA	NCA	6.02E02	NCA	NCA	8.25E02	1.74E03	1.80E03	NCA	2.55E03	2.61E05	3.74E05	2.61E05	1.99E04	1.99E04
60.0	1980	NCA	NCA	NCA	NCA	1.10E03	NCA	NCA	NCA	3.03 E03	NCA	NCA	NCA	7.28E05	NCA	NCA	NCA	5.38E04
	1985	NCA	NCA	NCA	NCA	1.10E03	NCA	NCA	NCA	3.03E03	9.00E03	NCA	NCA	6.19E05	8.88E05	NCA	NCA	3.94E04
	1990	NCA	NCA	NCA	NCA	1.21E03	NCA	NCA	1.50E03	3.03E03	6.00E03	NCA	NCA	5.29E05	7.50E05	NCA	3.88E04	3.88E04
	2000	NCA	NCA	2.05E03	NCA	1.21E03	NCA	NCA	1.50E03	3.03E03	3.60E03	NCA	NCA	5.29E05	7.50E05	NCA	3.88E04	3.88E04
100.0	1980	NCA	NCA	NCA	NCA	2.03E03	NCA	NCA	NCA	4.65E03	NCA	NCA	NCA	1.21E06	NCA	NCA	NCA	8.86E04
	1985	NCA	NCA	NCA	3.2[illegible]E03	2.03E03	NCA	NCA	NCA	4.65E03	1.50E04	NCA	NCA	1.03E06	1.48E06	NCA	NCA	6.48E04
	1990	3.18E03	NCA	3.03E03	3.58E03	2.23E03	NCA	NCA	2.50E03	4.65E03	1.00E04	NCA	NCA	8.72E05	1.24E06	NCA	NCA	6.29E04
	2000	3.18E03	NCA	3.03E03	3.58E03	2.23E03	NCA	NCA	2.50E03	4.65E02	6.00E03	NCA	NCA	8.72E05	1.24E06	NCA	6.29E04	6.29E04
250.0	1980	NCA	NCA	NCA	NCA	3.65E03	NCA	NCA	NCA	1.07E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.18E05
	1985	NCA	NCA	NCA	5.84E03	3.65E03	NCA	NCA	NCA	1.07E04	NCA	NCA	NCA	2.57E06	3.70E06	NCA	NCA	1.60E05
	1990	6.40E03	NCA	6.09E03	6.42E03	4.01E03	5.78E03	NCA	6.25E03	1.07E04	2.25E04	2.50E04	NCA	2.17E06	3.11E06	NCA	NCA	1.56E05
	2000	6.40E03	NCA	6.09E03	6.41E03	4.01E03	5.78E03	NCA	6.25E03	1.07E04	1.25E04	1.25E04	NCA	2.17E06	3.11E06	NCA	NCA	1.56E05
500.0	1980	NCA	NCA	1.03E04	NCA	7.08E03	NCA	NCA	NCA	2.13E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.03E04	1.13E04	7.08E03	NCA	NCA	NCA	2.13E04	NCA	NCA	NCA	5.14E06	NCA	NCA	NCA	3.19E05
	1990	1.08E04	NCA	1.03E04	1.24E04	7.79E03	1.12E04	NCA	1.11E04	2.13E04	2.50E04	3.00E04	NCA	4.35E06	6.31E06	NCA	NCA	3.11E05
	2000	1.08E04	NCA	1.03E04	1.24E04	7.79E03	1.12E04	NCA	1.11E04	2.13E04	2.00E04	2.00E04	NCA	4.35E06	6.31E06	NCA	NCA	3.11E05
750.0	1980	NCA	NCA	1.41E04	NCA	1.16E04	NCA	NCA	NCA	3.27E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.41E04	1.85E04	1.16E04	NCA	NCA	NCA	3.27E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	4.79E05
	1990	1.48E04	NCA	1.41E04	2.03E04	1.27E04	1.80E04	NCA	NCA	3.27E04	3.75E04	NCA	NCA	6.62E06	9.38E06	NCA	NCA	4.67E05
	2000	1.48E04	NCA	1.41E04	2.03E04	1.27E04	1.80E04	NCA	1.66E04	3.27E04	3.00E04	3.00E04	NCA	6.62E06	9.38E06	NCA	NCA	4.67E05
1000.0	1980	NCA	NCA	1.75E04	NCA	1.71E04	NCA	NCA	NCA	4.49E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.85E04	1.93E04	1.75E04	2.74E04	1.71E04	NCA	NCA	NCA	4.49E04	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.85E04	1.93E04	1.75E04	3.01E04	1.88E04	2.71E04	NCA	NCA	4.49E04	5.00E04	NCA	NCA	8.72E06	NCA	NCA	NCA	6.23E05
	2000	1.85E04	1.93E04	1.75E04	3.01E04	1.88E04	2.71E04	NCA	2.21E04	4.49E04	4.00E04	4.00E04	NCA	8.72E06	1.24E07	NCA	NCA	6.23E05
5000.0	1980	6.08E04	NCA	5.97E04	NCA	1.84E05	NCA	NCA	NCA	2.97E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	6.08E04	6.37E04	5.97E04	2.95E05	1.84E05	NCA	NCA	NCA	2.97E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	6.08E04	6.37E04	5.97E04	3.24E05	2.03E05	2.92E05	NCA	NCA	2.97E05	2.50E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	6.08E04	6.37E04	5.97E04	3.24E05	2.03E05	2.92E05	NCA	NCA	2.97E05	2.00E05	2.00E05	NCA	4.35E07	NCA	NCA	NCA	NCA

PARAMETER: SYSTEM EFFICIENCY UNITS: PERCENT

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.46	NCA	NCA	NCA	8.7	6.9	NCA	26.5	26.9
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.58	35	NCA	NCA	9.5	7.5	NCA	26.5	26.9
	1990	NCA	NCA	NCA	NCA	NCA	NCA	36.5	35.0	1.69	38	NCA	NCA	11.4	9.0	NCA	26.5	26.9
	2000	NCA	NCA	NCA	NCA	NCA	NCA	36.5	35.0	1.69	40	NCA	50	13.3	10.5	9.5	26.5	26.9
5.0	1980	NCA	NCA	NCA	NCA	26.9	NCA	NCA	NCA	5.79	NCA	NCA	NCA	8.7	6.9	NCA	29.9	31.1
	1985	NCA	NCA	NCA	NCA	29.6	NCA	NCA	NCA	6.25	35	NCA	NCA	9.5	7.5	NCA	29.9	31.1
	1990	NCA	NCA	NCA	NCA	31.1	NCA	36.5	35.0	6.69	38	NCA	NCA	11.4	9.0	NCA	29.9	31.1
	2000	NCA	NCA	NCA	NCA	31.1	NCA	36.5	35.0	6.69	40	NCA	50	13.3	10.5	9.5	29.9	31.1
20.0	1980	NCA	NCA	NCA	NCA	29.0	NCA	NCA	NCA	10.78	NCA	NCA	NCA	8.7	6.9	NCA	NCA	36.7
	1985	NCA	NCA	NCA	NCA	32.0	NCA	NCA	NCA	11.75	35	NCA	NCA	9.5	7.5	NCA	36.4	35.7
	1990	NCA	NCA	NCA	NCA	33.6	NCA	NCA	35.0	12.58	38	NCA	NCA	11.4	9.0	NCA	36.4	36.7
	2000	NCA	NCA	NCA	NCA	33.6	NCA	36.5	35.0	12.58	40	NCA	50	13.3	10.5	9.5	36.4	36.7
30.0	1980	NCA	NCA	NCA	NCA	29.5	NCA	NCA	NCA	12.24	NCA	NCA	NCA	8.7	6.9	NCA	NCA	38.5
	1985	NCA	NCA	NCA	NCA	32.5	NCA	NCA	NCA	13.34	35	NCA	NCA	9.5	7.5	NCA	38.1	38.5
	1990	NCA	NCA	NCA	NCA	34.1	NCA	NCA	35.0	14.27	40	NCA	NCA	11.4	9.0	NCA	38.1	38.5
	2000	NCA	NCA	NCA	NCA	34.1	NCA	NCA	35.0	14.27	42	NCA	50	13.3	10.5	9.5	38.1	38.5
60.0	1980	NCA	NCA	NCA	NCA	30.6	NCA	NCA	NCA	14.73	NCA	NCA	NCA	8.7	NCA	NCA	NCA	41.8
	1985	NCA	NCA	NCA	NCA	33.7	NCA	NCA	NCA	16.20	35	NCA	NCA	9.5	7.5	NCA	NCA	41.8
	1990	NCA	NCA	NCA	NCA	35.4	NCA	NCA	35.0	17.17	40	NCA	NCA	11.4	9.0	NCA	41.3	41.8
	2000	NCA	NCA	20.5	NCA	35.4	NCA	NCA	35.0	17.17	42	NCA	NCA	13.3	10.5	NCA	41.3	41.8
100.0	1980	NCA	NCA	NCA	NCA	31.3	NCA	NCA	NCA	1.66E01	NCA	NCA	NCA	8.7	NCA	NCA	NCA	44.4
	1985	NCA	NCA	NCA	40.7	34.5	NCA	NCA	NCA	1.83E01	38	NCA	NCA	9.5	7.5	NCA	NCA	44.4
	1990	42.3	NCA	22.5	42.7	36.2	46.2	NCA	35.0	1.94E01	40	NCA	NCA	11.4	9.0	NCA	NCA	44.4
	2000	42.3	NCA	22.5	42.7	36.2	46.2	NCA	35.0	1.94E01	45	NCA	NCA	13.3	10.5	NCA	43.9	44.4
250.0	1980	NCA	NCA	NCA	NCA	32.7	NCA	NCA	NCA	1.99E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	49.6
	1985	NCA	NCA	NCA	42.5	36.0	NCA	NCA	NCA	2.18E01	NCA	NCA	NCA	9.5	7.5	NCA	NCA	49.6
	1990	42.3	NCA	25.3	44.6	37.8	47.8	NCA	35.0	2.31E01	40	45	NCA	11.4	9.0	NCA	NCA	49.6
	2000	42.3	NCA	25.3	44.6	37.8	47.8	NCA	35.0	2.31E01	45	50	NCA	13.3	10.5	NCA	NCA	49.6
500.0	1980	NCA	NCA	21.1	NCA	33.7	NCA	NCA	NCA	2.24E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	21.1	43.8	37.1	NCA	NCA	NCA	2.49E01	NCA	NCA	NCA	9.5	NCA	NCA	NCA	49.6
	1990	42.3	NCA	27.4	46.0	39.0	48.0	NCA	35.0	2.64E01	40	48	NCA	11.4	9.0	NCA	NCA	49.6
	2000	42.3	NCA	27.4	46.0	39.0	48.0	NCA	35.0	2.64E01	45	52	NCA	13.3	10.5	NCA	NCA	49.6
750.0	1980	NCA	NCA	22.1	NCA	34.3	NCA	NCA	NCA	2.38E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	22.1	44.6	37.8	NCA	NCA	NCA	2.67E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	49.6
	1990	42.3	NCA	27.5	46.8	39.7	48.7	NCA	NCA	2.83E01	40	NCA	NCA	11.4	9.0	NCA	NCA	49.6
	2000	42.3	NCA	27.5	46.8	39.7	48.7	NCA	35.0	2.83E01	45	52	NCA	13.3	10.5	NCA	NCA	49.6
1000.0	1980	NCA	NCA	22.7	NCA	34.7	NCA	NCA	NCA	2.49E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	36.6	33.3	22.7	45.1	38.2	NCA	NCA	NCA	2.79E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	42.3	33.3	27.2	47.3	40.1	49.1	NCA	NCA	2.93E01	40	NCA	NCA	11.4	NCA	NCA	NCA	49.6
	2000	42.3	41.7	27.2	47.3	40.1	49.1	NCA	35.0	2.93E01	45	52	NCA	13.3	10.5	NCA	NCA	49.6
5000.0	1980	36.6	NCA	25.7	NCA	37.0	NCA	NCA	NCA	3.06E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	36.6	34.4	25.7	48.1	40.8	NCA	NCA	NCA	3.46E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	42.3	34.4	29.4	50.5	42.8	51.8	NCA	NCA	3.63E01	40	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	42.3	43.2	29.4	50.5	42.8	51.8	NCA	NCA	3.63E01	45	52	NCA	13.3	NCA	NCA	NCA	NCA

PARAMETER: EFFICIENCY (ex. B.O.P.) UNITS: PERCENT

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
		REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.31	NCA	NCA	NCA	10.6	9.8	NCA	31.0	31.4
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.42	46	NCA	NCA	11.6	10.7	NCA	31.0	31.4
	1990	NCA	NCA	NCA	NCA	NCA	NCA	45.0	43.8	1.52	50	NCA	NCA	13.9	11.2	NCA	31.0	31.4
	2000	NCA	NCA	NCA	NCA	NCA	NCA	45.0	43.8	1.52	52	NCA	66	16.2	14.9	11.6	31.0	31.4
5.0	1980	NCA	NCA	NCA	NCA	29.4	NCA	NCA	NCA	5.21	NCA	NCA	NCA	10.6	9.8	NCA	35.0	36.4
	1985	NCA	NCA	NCA	NCA	32.4	NCA	NCA	NCA	5.63	46	NCA	NCA	11.6	10.7	NCA	35.0	36.4
	1990	NCA	NCA	NCA	NCA	34.0	NCA	45.0	43.8	6.02	50	NCA	NCA	13.9	11.2	NCA	35.0	36.4
	2000	NCA	NCA	NCA	NCA	34.0	NCA	45.0	43.8	6.02	52	NCA	66	16.2	14.9	11.6	35.0	36.4
20.0	1980	NCA	NCA	NCA	NCA	30.6	NCA	NCA	NCA	9.70	NCA	NCA	NCA	10.6	9.8	NCA	NCA	42.9
	1985	NCA	NCA	NCA	NCA	33.7	NCA	NCA	NCA	10.58	46	NCA	NCA	11.6	10.7	NCA	42.5	42.9
	1990	NCA	NCA	NCA	NCA	35.4	NCA	NCA	43.8	11.33	50	NCA	NCA	13.9	11.2	NCA	42.5	42.9
	2000	NCA	NCA	NCA	NCA	35.4	NCA	45.0	43.8	11.33	52	NCA	66	16.2	14.9	11.6	42.5	42.9
30.0	1980	NCA	NCA	NCA	NCA	31.0	NCA	NCA	NCA	11.02	NCA	NCA	NCA	10.6	9.8	NCA	NCA	45.0
	1985	NCA	NCA	NCA	NCA	34.2	NCA	NCA	NCA	12.01	46	NCA	NCA	11.6	10.7	NCA	44.5	45.0
	1990	NCA	NCA	NCA	NCA	35.9	NCA	NCA	43.8	12.84	52	NCA	NCA	13.9	11.2	NCA	44.5	45.0
	2000	NCA	NCA	NCA	NCA	35.9	NCA	NCA	43.8	12.84	55	NCA	66	16.2	14.9	11.6	44.5	45.0
60.0	1980	NCA	NCA	NCA	NCA	31.9	NCA	NCA	NCA	13.26	NCA	NCA	NCA	10.6	NCA	NCA	NCA	48.9
	1985	NCA	NCA	NCA	NCA	35.2	NCA	NCA	NCA	14.58	46	NCA	NCA	11.6	10.7	NCA	NCA	48.9
	1990	NCA	NCA	NCA	NCA	36.9	NCA	NCA	43.8	15.45	52	NCA	NCA	13.9	11.2	NCA	48.3	48.9
	2000	NCA	NCA	22.8	NCA	36.9	NCA	NCA	43.8	15.45	55	NCA	NCA	16.2	14.9	NCA	48.3	48.9
100.0	1980	NCA	NCA	NCA	NCA	32.7	NCA	NCA	NCA	1.49E01	NCA	NCA	NCA	10.6	NCA	NCA	NCA	51.9
	1985	NCA	NCA	NCA	42.5	36.0	NCA	NCA	NCA	1.65E01	50	NCA	NCA	11.6	10.7	NCA	NCA	51.9
	1990	47.0	NCA	25.0	44.6	37.8	NCA	NCA	43.8	1.75E01	52	NCA	NCA	13.9	11.2	NCA	NCA	51.9
	2000	47.0	NCA	25.0	44.6	37.8	NCA	NCA	43.8	1.75E01	59	NCA	NCA	16.2	14.9	NCA	51.3	51.9
250.0	1980	NCA	NCA	NCA	NCA	34.4	NCA	NCA	NCA	1.78E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	58.0
	1985	NCA	NCA	NCA	44.7	37.9	NCA	NCA	NCA	1.96E01	NCA	NCA	NCA	11.6	10.7	NCA	NCA	58.0
	1990	47.0	NCA	28.1	47.0	39.8	49.8	NCA	43.8	2.08E01	52	55	NCA	13.9	11.2	NCA	NCA	58.0
	2000	47.0	NCA	28.1	47.0	39.8	49.8	NCA	43.8	2.08E01	59	61	NCA	16.2	14.9	NCA	NCA	58.0
500.0	1980	NCA	NCA	23.4	NCA	35.8	NCA	NCA	NCA	2.02E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	23.4	46.6	39.5	NCA	NCA	NCA	2.24E01	NCA	NCA	NCA	11.6	NCA	NCA	NCA	58.0
	1990	47.0	NCA	30.4	48.9	41.4	51.4	NCA	43.8	2.38E01	52	59	NCA	13.9	11.2	NCA	NCA	58.0
	2000	47.0	NCA	30.4	48.9	41.4	51.4	NCA	43.8	2.38E01	59	64	NCA	16.2	14.9	NCA	NCA	58.0
750.0	1980	NCA	NCA	24.5	NCA	36.7	NCA	NCA	NCA	2.14E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	24.5	47.7	40.4	NCA	NCA	NCA	2.40E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	58.0
	1990	47.0	NCA	30.6	50.2	42.5	51.5	NCA	NCA	2.55E01	52	NCA	NCA	13.9	11.2	NCA	NCA	58.0
	2000	47.0	NCA	30.6	50.2	42.5	51.5	NCA	43.8	2.55E01	59	64	NCA	16.2	14.9	NCA	NCA	58.0
1000.0	1980	NCA	NCA	25.2	NCA	37.4	NCA	NCA	NCA	2.24E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	40.7	37.0	25.2	48.6	41.2	NCA	NCA	NCA	2.51E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	47.0	37.0	30.2	51.1	43.3	52.3	NCA	NCA	2.64E01	52	NCA	NCA	13.9	NCA	NCA	NCA	58.0
	2000	47.0	46.3	30.2	51.1	43.3	52.3	NCA	43.8	2.64E01	59	64	NCA	16.2	14.9	NCA	NCA	58.0
5000.0	1980	40.7	NCA	28.5	NCA	41.8	NCA	NCA	NCA	2.75E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	40.7	38.2	28.5	54.4	46.1	NCA	NCA	NCA	3.11E01	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	47.0	38.2	32.7	57.1	48.4	57.4	NCA	NCA	3.27E01	52	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	47.0	48.0	32.7	57.1	48.4	57.4	NCA	NCA	3.27E01	59	64	NCA	16.2	NCA	NCA	NCA	NCA

PARAMETER: ANNUAL FUEL CONSUMPTION UNITS: Btu

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.76E09	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.55E09	1.15E08	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	NCA	NCA	1.11E08	1.15E08	2.39E09	1.06E08	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	NCA	NCA	1.11E08	1.15E08	2.39E09	1.01E08	NCA	8.07E07	0	0	0	0	0
5.0	1980	NCA	NCA	NCA	NCA	5.00E08	NCA	NCA	NCA	2.32E09	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	4.55E08	NCA	NCA	NCA	2.15E09	3.83E08	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	4.33E08	NCA	3.67E08	3.84E08	2.01E09	3.53E08	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	4.33E08	NCA	3.67E08	3.84E08	2.01E09	3.37E08	NCA	2.69E08	0	0	0	0	0
20.0	1980	NCA	NCA	NCA	NCA	1.86E09	NCA	NCA	NCA	4.99E09	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	1.68E09	NCA	NCA	NCA	4.58E09	1.53E09	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	1.60E09	NCA	NCA	1.54E09	4.28E09	1.41E09	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	1.60E09	NCA	1.47E09	1.54E09	4.28E09	1.35E09	NCA	1.08E09	0	0	0	0	0
30.0	1980	NCA	NCA	NCA	NCA	2.74E09	NCA	NCA	NCA	6.60E09	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	2.49E09	NCA	NCA	NCA	6.05E09	2.30E09	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	2.37E09	NCA	NCA	2.31E09	5.66E09	2.12E09	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	2.37E09	NCA	NCA	2.31E09	5.66E09	2.03E09	NCA	1.62E09	0	0	0	0	0
60.0	1980	NCA	NCA	NCA	NCA	5.28E09	NCA	NCA	NCA	1.10E10	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	4.79E09	NCA	NCA	NCA	9.97E09	4.60E09	NCA	NCA	0	0	NCA	NCA	0
	1990	NCA	NCA	NCA	NCA	4.56E09	NCA	NCA	4.61E09	9.40E09	4.24E09	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	7.88E09	NCA	4.56E09	NCA	NCA	4.61E09	9.40E09	4.06E09	NCA	NCA	0	0	NCA	0	0
100.0	1980	NCA	NCA	NCA	NCA	8.60E09	NCA	NCA	NCA	1.62E10	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	6.61E09	7.80E09	NCA	NCA	NCA	1.47E10	7.08E09	NCA	NCA	0	0	NCA	NCA	0
	1990	6.36E09	NCA	1.20E10	6.30E09	7.44E09	NCA	NCA	7.69E09	1.39E10	6.73E09	NCA	NCA	0	0	NCA	NCA	0
	2000	6.36E09	NCA	1.20E10	6.30E09	7.44E09	NCA	NCA	7.69E09	1.39E10	5.98E09	NCA	NCA	0	0	NCA	0	0
250.0	1980	NCA	NCA	NCA	NCA	2.06E10	NCA	NCA	NCA	3.38E10	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	1.65E10	1.87E10	NCA	NCA	NCA	3.09E10	NCA	NCA	NCA	0	0	NCA	NCA	0
	1990	1.59E10	NCA	2.66E10	1.58E10	1.78E10	1.41E10	NCA	1.92E10	2.91E10	1.68E10	1.50E10	NCA	0	0	NCA	NCA	0
	2000	1.59E10	NCA	2.66E10	1.58E10	1.78E10	1.41E10	NCA	1.92E10	2.91E10	1.49E10	1.35E10	NCA	0	0	NCA	NCA	0
500.0	1980	NCA	NCA	6.38E10	NCA	3.99E10	NCA	NCA	NCA	6.01E10	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	6.38E10	3.17E10	3.63E10	NCA	NCA	NCA	5.40E10	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1990	3.18E10	NCA	4.91E10	2.93E10	3.45E10	2.90E10	NCA	3.84E10	5.10E10	3.36E10	2.80E10	NCA	0	0	NCA	NCA	0
	2000	3.18E10	NCA	4.91E10	2.93E10	3.45E10	2.80E10	NCA	3.84E10	5.10E10	2.98E10	2.59E10	NCA	0	0	NCA	NCA	0
750.0	1980	NCA	NCA	9.13E10	NCA	5.89E10	NCA	NCA	NCA	8.48E10	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	9.13E10	4.53E10	5.34E10	NCA	NCA	NCA	7.56E10	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1990	4.77E10	NCA	7.34E10	4.31E10	5.09E10	4.15E10	NCA	NCA	7.13E10	5.04E10	NCA	NCA	0	0	NCA	NCA	0
	2000	4.77E10	NCA	7.34E10	4.31E10	5.09E10	4.15E10	NCA	5.77E10	7.13E10	4.47E10	3.89E10	NCA	0	0	NCA	NCA	0
1000.0	1980	NCA	NCA	1.19E11	NCA	7.76E10	NCA	NCA	NCA	1.08E11	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	7.35E10	8.08E10	1.19E11	5.97E10	7.05E10	NCA	NCA	NCA	9.64E10	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	6.36E10	8.08E10	9.90E10	5.69E10	6.71E10	5.48E10	NCA	NCA	9.18E10	6.77E10	NCA	NCA	0	NCA	NCA	NCA	0
	2000	6.36E10	6.45E10	9.90E10	5.69E10	6.71E10	5.48E10	NCA	7.69E10	9.18E10	5.96E10	5.18E10	NCA	0	0	NCA	NCA	0
5000.0	1980	3.68E11	NCA	5.24E11	NCA	3.64E11	NCA	NCA	NCA	4.40E11	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3.68E11	3.91E11	5.24E11	2.80E11	3.30E11	NCA	NCA	NCA	3.89E11	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3.18E11	3.91E11	4.58E11	2.67E11	3.15E11	2.60E11	NCA	NCA	3.71E11	3.36E11	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	3.18E11	3.12E11	4.58E11	2.67E11	3.15E11	2.60E11	NCA	NCA	3.71E11	2.98E11	2.59E11	NCA	0	NCA	NCA	NCA	NCA

PARAMETER: ANNUAL FUEL COST UNITS: 1980 DOLLARS

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.32E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.20E04	1.01E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	NCA	NCA	9.57E02	9.91E02	2.06E04	9.35E02	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	NCA	NCA	9.57E02	9.91E02	2.06E04	8.91E02	NCA	7.12E02	0	0	0	0	0
5.0	1980	NCA	NCA	NCA	NCA	4.20E03	NCA	NCA	NCA	1.95E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	3.92E03	NCA	NCA	NCA	1.85E04	3.38E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	3.73E03	NCA	3.16E03	3.31E03	1.73E04	3.11E03	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	3.73E03	NCA	3.16E03	3.31E03	1.73E04	2.97E03	NCA	2.37E03	0	0	0	0	0
20.0	1980	NCA	NCA	NCA	NCA	1.56E04	NCA	NCA	NCA	4.19E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	1.45E04	NCA	NCA	NCA	3.95E04	1.35E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	1.38E04	NCA	NCA	1.33E04	3.69E04	1.24E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	1.38E04	NCA	1.27E04	1.33E04	3.69E04	1.19E04	NCA	9.53E03	0	0	0	0	0
30.0	1980	NCA	NCA	NCA	NCA	2.30E04	NCA	NCA	NCA	5.54E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	2.15E04	NCA	NCA	NCA	5.22E04	2.03E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	2.04E04	NCA	NCA	1.99E04	4.88E04	1.87E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	2.04E04	NCA	NCA	1.99E04	4.88E04	1.79E04	NCA	1.43E04	0	0	0	0	0
60.0	1980	NCA	NCA	NCA	NCA	4.44E04	NCA	NCA	NCA	9.24E04	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	4.13E04	NCA	NCA	NCA	8.59E04	4.06E04	NCA	NCA	0	0	NCA	NCA	0
	1990	NCA	NCA	NCA	NCA	3.93E04	NCA	NCA	3.97E04	8.10E04	3.74E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	1.95E04	NCA	3.93E04	NCA	NCA	3.97E04	8.10E04	3.58E04	NCA	NCA	0	0	NCA	0	0
100.0	1980	NCA	NCA	NCA	NCA	7.22E04	NCA	NCA	NCA	1.36E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	5.70E04	6.72E04	NCA	NCA	NCA	1.27E05	6.24E04	NCA	NCA	0	0	NCA	NCA	0
	1990	1.57E04	NCA	2.96E04	5.43E04	6.41E04	NCA	NCA	6.63E04	1.20E05	5.94E04	NCA	NCA	0	0	NCA	NCA	0
	2000	1.57E04	NCA	2.96E04	5.43E04	6.41E04	NCA	NCA	6.63E04	1.20E05	5.27E04	NCA	NCA	0	0	NCA	0	0
250.0	1980	NCA	NCA	NCA	NCA	1.73E05	NCA	NCA	NCA	2.84E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	1.42E05	1.61E05	NCA	NCA	NCA	2.66E05	NCA	NCA	NCA	0	0	NCA	NCA	0
	1990	3.93E04	NCA	6.57E04	1.36E05	1.53E05	1.22E05	NCA	1.66E05	2.51E05	1.48E05	1.32E05	NCA	0	0	NCA	NCA	0
	2000	3.93E04	NCA	6.57E04	1.36E05	1.53E05	1.22E05	NCA	1.66E05	2.51E05	1.31E05	1.19E05	NCA	0	0	NCA	NCA	0
500.0	1980	NCA	NCA	8.29E04	NCA	3.35E05	NCA	NCA	NCA	5.05E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.58E05	2.73E05	3.13E05	NCA	NCA	NCA	4.65E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1990	7.85E04	NCA	1.21E05	2.53E05	2.97E05	2.41E05	NCA	3.31E05	4.40E05	2.96E05	2.47E05	NCA	0	0	NCA	NCA	0
	2000	7.85E04	NCA	1.21E05	2.53E05	2.97E05	2.41E05	NCA	3.31E05	4.40E05	2.63E05	2.28E05	NCA	0	0	NCA	NCA	0
750.0	1980	NCA	NCA	1.19E05	NCA	4.95E05	NCA	NCA	NCA	4.92E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.26E05	3.90E05	4.60E05	NCA	NCA	NCA	4.42E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1990	1.18E05	NCA	1.81E05	3.72E05	4.39E05	3.58E05	NCA	NCA	4.17E05	4.45E05	NCA	NCA	0	0	NCA	NCA	0
	2000	1.18E05	NCA	1.81E05	3.72E05	4.39E05	3.58E05	NCA	3.37E05	4.17E05	3.94E05	3.43E05	NCA	0	0	NCA	NCA	0
1000.0	1980	NCA	NCA	1.55E05	NCA	6.52E05	NCA	NCA	NCA	6.26E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.82E05	4.73E05	2.94E05	5.15E05	6.08E05	NCA	NCA	NCA	5.64E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.57E05	4.73E05	2.45E05	4.90E05	5.78E05	4.72E05	NCA	NCA	5.37E05	5.97E05	NCA	NCA	0	NCA	NCA	NCA	0
	2000	1.57E05	3.77E05	2.45E05	4.90E05	5.78E05	4.72E05	NCA	4.50E05	5.37E05	5.25E05	4.57E05	NCA	0	0	NCA	NCA	0
5000.0	1980	4.78E05	NCA	6.81E05	NCA	3.06E06	NCA	NCA	NCA	2.55E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	9.98E05	2.29E06	1.29E06	2.41E06	2.84E06	NCA	NCA	NCA	2.28E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	7.85E05	2.29E06	1.13E06	2.30E06	2.72E06	2.24E06	NCA	NCA	2.17E06	2.96E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	7.85E05	1.83E06	1.13E06	2.30E06	2.72E06	2.24E06	NCA	NCA	2.17E06	2.63E06	2.28E06	NCA	0	NCA	NCA	NCA	NCA

PARAMETER: ANNUAL FUEL COST, 5% UNITS: 1980 DOLLARS

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.38E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.81E04	1.29E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	NCA	NCA	1.56E03	1.61E03	3.36E04	1.52E03	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	NCA	NCA	2.59E03	2.63E03	5.46E04	2.36E03	NCA	1.89E03	0	0	0	0	0
5.0	1980	NCA	NCA	NCA	NCA	4.31E03	NCA	NCA	NCA	1.90E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	5.00E03	NCA	NCA	NCA	2.36E04	4.32E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	6.08E03	NCA	5.15E03	5.39E03	2.82E04	5.07E03	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	9.90E03	NCA	8.39E03	8.78E03	4.59E04	7.88E03	NCA	6.29E03	0	0	0	0	0
20.0	1980	NCA	NCA	NCA	NCA	1.60E04	NCA	NCA	NCA	4.30E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	1.85E04	NCA	NCA	NCA	5.04E04	1.72E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	2.25E04	NCA	NCA	2.16E05	6.01E04	2.02E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	3.66E04	NCA	3.36E04	3.52E04	9.78E04	3.16E04	NCA	2.53E04	0	0	0	0	0
30.0	1980	NCA	NCA	NCA	NCA	2.36E04	NCA	NCA	NCA	5.69E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	2.74E04	NCA	NCA	NCA	6.66E04	2.25E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	3.33E04	NCA	NCA	3.24E04	7.94E04	3.04E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	5.42E04	NCA	NCA	6.47E04	1.29E05	4.75E05	NCA	3.79E04	0	0	0	0	0
60.0	1980	NCA	NCA	NCA	NCA	4.55E04	NCA	NCA	NCA	9.48E04	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	5.27E04	NCA	NCA	NCA	1.06E05	5.18E04	NCA	NCA	0	0	NCA	NCA	0
	1990	NCA	NCA	NCA	NCA	6.40E04	NCA	NCA	1.08E05	1.32E05	6.09E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	5.16E04	NCA	1.04E05	NCA	NCA	1.76E05	2.15E05	9.50E04	NCA	NCA	0	0	NCA	0	0
100.0	1980	NCA	NCA	NCA	NCA	7.41E05	NCA	NCA	NCA	1.39E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	7.27E04	8.58E05	NCA	NCA	NCA	1.62E05	7.96E04	NCA	NCA	0	0	NCA	NCA	0
	1990	2.56E04	NCA	NCA	8.89E04	1.04E05	NCA	NCA	2.70E05	1.95E05	9.66E04	NCA	NCA	0	0	NCA	NCA	0
	2000	4.16E04	NCA	4.82E04	1.44E05	1.70E05	NCA	NCA	4.39E05	3.18E05	1.40E05	NCA	NCA	0	0	NCA	0	0
250.0	1980	NCA	NCA	NCA	NCA	1.78E05	NCA	NCA	NCA	2.91E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	1.82E05	2.06E05	NCA	NCA	NCA	3.40E05	NCA	NCA	NCA	0	0	NCA	NCA	0
	1990	6.39E04	NCA	1.07E05	2.22E05	2.50E05	8.18E04	NCA	5.39E05	4.08E05	2.41E05	2.15E05	NCA	0	0	NCA	NCA	0
	2000	1.09E05	NCA	1.74E05	3.61E05	4.07E05	1.33E05	NCA	8.78E05	6.65E05	3.49E05	3.16E05	NCA	0	0	NCA	NCA	0
500.0	1980	NCA	NCA	1.57E05	NCA	3.44E05	NCA	NCA	NCA	5.18E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.01E05	3.99E05	3.99E05	NCA	NCA	NCA	5.94E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1990	1.28E05	NCA	1.97E05	4.11E05	4.89E05	1.98E05	NCA	NCA	7.16E05	5.17E05	4.02E05	NCA	0	0	NCA	NCA	0
	2000	2.08E05	NCA	3.21E05	6.70E05	7.89E05	3.22E05	NCA	1.32E06	1.16E06	6.97E05	6.06E05	NCA	0	0	NCA	NCA	0
750.0	1980	NCA	NCA	2.25E05	NCA	5.08E05	NCA	NCA	NCA	4.96E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.87E05	4.98E05	5.87E05	NCA	NCA	NCA	5.65E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1990	1.92E05	NCA	2.95E05	6.05E05	7.14E05	3.93E05	NCA	NCA	6.79E05	7.24E05	NCA	NCA	0	0	NCA	NCA	0
	2000	3.12E05	NCA	4.81E05	9.85E05	1.16E06	6.40E05	NCA	8.96E05	1.11E06	1.05E06	9.10E05	NCA	0	0	NCA	NCA	0
1000.0	1980	NCA	NCA	2.94E05	NCA	6.69E05	NCA	NCA	NCA	6.32E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.31E05	6.04E05	3.75E05	6.57E05	7.76E05	NCA	NCA	NCA	7.20E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.55E05	7.70E05	3.98E05	7.99E05	9.42E05	5.83E05	NCA	NCA	8.75E05	9.72E05	NCA	NCA	0	NCA	NCA	NCA	0
	2000	4.16E05	1.00E06	5.89E05	1.30E06	1.53E06	9.49E05	NCA	1.19E06	1.42E06	1.39E06	2.21E06	NCA	0	0	NCA	NCA	0
5000.0	1980	9.09E05	NCA	1.29E06	NCA	3.14E06	NCA	NCA	NCA	2.34E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.16E06	2.92E06	1.65E06	3.08E06	3.63E06	NCA	NCA	NCA	2.90E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.28E06	3.73E06	1.84E06	3.75E06	4.42E06	7.69E05	NCA	NCA	3.53E06	4.82E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	2.08E06	4.84E06	3.00E06	6.10E06	7.20E06	1.25E06	NCA	NCA	5.76E06	6.97E06	6.06E06	NCA	0	NCA	NCA	NCA	NCA

PARAMETER: ANNUAL FUEL COST, 10% UNITS: 1980 DOLLARS

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.47E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3.54E04	1.62E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	NCA	NCA	2.48E03	2.56E03	5.72E04	2.41E03	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	NCA	NCA	6.07E03	6.65E03	1.38E05	5.97E03	NCA	4.78E03	0	0	0	0	0
5.0	1980	NCA	NCA	NCA	NCA	6.30E03	NCA	NCA	NCA	1.94E04	NCA	NCA	NCA	0	0	NCA	0	0
	1985	NCA	NCA	NCA	NCA	6.30E03	NCA	NCA	NCA	2.97E04	5.43E03	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	9.66E03	NCA	8.19E03	8.57E03	4.48E04	8.06E03	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	2.50E04	NCA	2.12E04	2.22E04	1.16E05	1.99E04	NCA	1.59E04	0	0	0	0	0
20.0	1980	NCA	NCA	NCA	NCA	1.66E04	NCA	NCA	NCA	4.39E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	2.33E04	NCA	NCA	NCA	6.35E04	2.17E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	3.58E04	NCA	NCA	3.43E05	9.55E04	3.21E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	9.26E04	NCA	8.50E04	8.91E04	2.47E05	7.99E04	NCA	5.81E04	0	0	0	0	0
30.0	1980	NCA	NCA	NCA	NCA	2.41E04	NCA	NCA	NCA	5.80E04	NCA	NCA	NCA	0	0	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	3.45E04	NCA	NCA	NCA	8.31E04	2.83E04	NCA	NCA	0	0	NCA	0	0
	1990	NCA	NCA	NCA	NCA	5.29E04	NCA	NCA	5.15E04	1.26E05	4.83E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	NCA	NCA	1.37E05	NCA	NCA	1.64E05	3.26E05	1.20E06	NCA	9.59E04	0	0	0	0	0
60.0	1980	NCA	NCA	NCA	NCA	4.64E04	NCA	NCA	NCA	9.66E04	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	NCA	6.69E04	NCA	NCA	NCA	1.33E05	6.53E04	NCA	NCA	0	0	NCA	NCA	0
	1990	NCA	NCA	NCA	NCA	1.02E05	NCA	NCA	1.72E05	2.10E05	9.68E04	NCA	NCA	0	0	NCA	0	0
	2000	NCA	NCA	1.31E05	NCA	2.63E05	NCA	NCA	4.45E05	5.43E05	2.40E05	NCA	NCA	0	0	NCA	0	0
100.0	1980	NCA	NCA	NCA	NCA	7.56E04	NCA	NCA	NCA	1.41E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	9.16E04	1.08E05	NCA	NCA	NCA	2.04E05	1.00E05	NCA	NCA	0	0	NCA	NCA	0
	1990	4.07E04	NCA	NCA	1.40E05	1.65E05	NCA	NCA	4.29E05	3.10E05	1.53E05	NCA	NCA	0	0	NCA	NCA	0
	2000	1.05E05	NCA	1.22E05	3.64E05	4.30E05	NCA	NCA	1.11E06	8.04E05	3.59E05	NCA	NCA	0	0	NCA	0	0
250.0	1980	NCA	NCA	NCA	NCA	1.81E05	NCA	NCA	NCA	2.97E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1985	NCA	NCA	NCA	2.29E04	2.60E05	NCA	NCA	NCA	4.28E05	NCA	NCA	NCA	0	0	NCA	NCA	0
	1990	1.10E05	NCA	1.70E05	3.52E05	3.98E05	1.30E05	NCA	8.57E05	6.49E05	3.83E05	3.42E05	NCA	0	0	NCA	NCA	0
	2000	2.63E05	NCA	4.40E05	9.13E05	1.03E06	3.36E05	NCA	2.22E06	1.68E06	8.83E05	7.99E05	NCA	0	0	NCA	NCA	0
500.0	1980	NCA	NCA	2.48E05	NCA	3.50E05	NCA	NCA	NCA	5.28E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.53E05	4.39E05	5.03E05	NCA	NCA	NCA	7.48E05	NCA	NCA	NCA	0	NCA	NCA	NCA	0
	1990	2.03E05	NCA	3.13E05	6.53E05	7.69E05	3.14E05	NCA	NCA	1.14E06	8.22E05	6.39E05	NCA	0	0	NCA	NCA	0
	2000	5.26E05	NCA	8.12E05	1.69E06	2.00E06	8.15E05	NCA	3.34E06	2.93E06	1.76E06	1.52E06	NCA	0	0	NCA	NCA	0
750.0	1980	NCA	NCA	3.55E05	NCA	5.18E05	NCA	NCA	NCA	4.99E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3.61E05	6.27E05	7.40E05	NCA	NCA	NCA	7.12E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	0
	1990	3.05E05	NCA	4.69E05	9.54E05	1.14E06	6.25E05	NCA	NCA	1.08E06	1.15E06	NCA	NCA	0	0	NCA	NCA	0
	2000	7.89E05	NCA	1.22E06	2.49E06	2.93E06	1.62E06	NCA	2.27E06	2.80E06	2.66E06	2.30E06	NCA	0	0	NCA	NCA	0
1000.0	1980	NCA	NCA	4.64E05	NCA	6.82E05	NCA	NCA	NCA	6.36E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.91E05	7.61E05	4.73E05	8.28E05	9.78E05	NCA	NCA	NCA	9.07E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	4.05E05	1.22E06	6.33E05	1.27E06	1.49E05	9.27E05	NCA	NCA	1.39E06	1.55E06	NCA	NCA	0	NCA	NCA	NCA	0
	2000	1.05E05	2.53E06	1.49E06	3.29E06	3.87E06	2.40E06	NCA	3.01E06	3.59E06	3.52E06	5.57E06	NCA	0	0	NCA	NCA	0
5000.0	1980	1.44E06	NCA	2.04E06	NCA	3.20E06	NCA	NCA	NCA	2.36E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.46E06	3.68E06	2.08E06	3.88E06	4.57E06	NCA	NCA	NCA	3.65E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.03E06	5.93E06	2.92E06	5.96E06	7.03E06	1.22E06	NCA	NCA	5.61E06	7.66E06	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	5.26E06	1.22E07	7.59E06	1.54E07	1.82E07	3.16E06	NCA	NCA	1.47E07	1.76E07	1.53E06	NCA	0	NCA	NCA	NCA	NCA

PARAMETER: LIFE-CYCLE COST UNITS: 1980 CENTS/kWh

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
		REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	85.3	NCA	NCA	NCA	185.2	269.0	NCA	21.5	21.5
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	81.0	5.40	NCA	NCA	159.0	230.9	NCA	19.3	19.3
	1990	NCA	NCA	NCA	NCA	NCA	NCA	4.26	4.38	75.9	4.56	NCA	NCA	135.0	196.1	NCA	18.4	18.4
	2000	NCA	NCA	NCA	NCA	NCA	NCA	4.26	4.38	75.9	3.91	NCA	3.56	135.0	196.1	135.0	18.4	18.4
5.0	1980	NCA	NCA	NCA	NCA	5.28	NCA	NCA	NCA	22.8	NCA	NCA	NCA	185.6	268.5	NCA	15.0	15.0
	1985	NCA	NCA	NCA	NCA	4.97	NCA	NCA	NCA	21.7	5.41	NCA	NCA	158.9	230.7	NCA	13.2	13.2
	1990	NCA	NCA	NCA	NCA	4.84	NCA	4.23	4.39	20.4	4.53	NCA	NCA	135.3	196.2	NCA	12.6	12.6
	2000	NCA	NCA	NCA	NCA	4.84	NCA	4.23	4.39	20.4	3.91	NCA	3.56	135.3	196.2	135.0	12.6	12.6
20.0	1980	NCA	NCA	NCA	NCA	5.05	NCA	NCA	NCA	12.1	NCA	NCA	NCA	185.7	269.3	NCA	NCA	11.4
	1985	NCA	NCA	NCA	NCA	4.75	NCA	NCA	NCA	11.4	5.41	NCA	NCA	159.0	230.8	NCA	9.75	9.75
	1990	NCA	NCA	NCA	NCA	4.65	NCA	NCA	4.13	10.7	4.52	NCA	NCA	135.3	196.1	NCA	9.38	9.38
	2000	NCA	NCA	NCA	NCA	4.65	NCA	3.97	4.13	10.7	3.92	NCA	3.57	135.3	196.1	135.3	9.38	9.38
30.0	1980	NCA	NCA	NCA	NCA	5.06	NCA	NCA	NCA	10.7	NCA	NCA	NCA	185.6	269.4	NCA	NCA	10.8
	1985	NCA	NCA	NCA	NCA	4.79	NCA	NCA	NCA	10.1	5.41	NCA	NCA	158.6	231.1	NCA	9.15	9.15
	1990	NCA	NCA	NCA	NCA	4.68	NCA	NCA	4.08	9.46	4.54	NCA	NCA	133.6	193.7	NCA	8.82	8.82
	2000	NCA	NCA	NCA	NCA	4.68	NCA	NCA	4.08	9.46	3.93	NCA	3.57	133.6	193.7	133.6	8.82	8.82
60.0	1980	NCA	NCA	NCA	NCA	5.16	NCA	NCA	NCA	8.91	NCA	NCA	NCA	185.8	NCA	NCA	NCA	9.98
	1985	NCA	NCA	NCA	NCA	4.88	NCA	NCA	NCA	8.32	5.41	NCA	NCA	158.9	231.1	NCA	NCA	8.43
	1990	NCA	NCA	NCA	NCA	4.82	NCA	NCA	4.03	7.88	4.54	NCA	NCA	133.8	194.3	NCA	8.11	8.11
	2000	NCA	NCA	2.37	NCA	4.82	NCA	NCA	4.03	7.88	3.93	NCA	NCA	133.8	194.3	NCA	8.11	8.11
100.0	1980	NCA	NCA	NCA	NCA	5.42	NCA	NCA	NCA	7.89	NCA	NCA	NCA	185.8	NCA	NCA	NCA	9.57
	1985	NCA	NCA	NCA	5.50	5.15	NCA	NCA	NCA	7.40	5.13	NCA	NCA	159.0	230.8	NCA	NCA	8.05
	1990	1.42	NCA	2.15	5.60	5.13	NCA	NCA	4.03	7.02	4.38	NCA	NCA	134.0	193.2	NCA	NCA	7.51
	2000	1.42	NCA	2.15	5.60	5.13	NCA	NCA	4.03	7.02	3.55	NCA	NCA	134.0	193.2	NCA	7.52	7.51
250.0	1980	NCA	NCA	NCA	NCA	5.03	NCA	NCA	NCA	6.64	NCA	NCA	NCA	NCA	NCA	NCA	NCA	9.07
	1985	NCA	NCA	NCA	5.14	4.77	NCA	NCA	NCA	6.25	NCA	NCA	NCA	158.9	230.8	NCA	NCA	7.59
	1990	1.31	NCA	1.86	5.22	4.73	4.69	NCA	4.04	5.92	4.25	4.02	NCA	133.8	193.5	NCA	NCA	7.30
	2000	1.31	NCA	1.86	5.22	4.73	4.69	NCA	4.04	5.92	3.42	3.16	NCA	133.8	193.5	NCA	NCA	7.30
500.0	1980	NCA	NCA	1.27	NCA	4.77	NCA	NCA	NCA	5.95	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.08	4.78	4.53	NCA	NCA	NCA	5.52	NCA	NCA	NCA	158.9	NCA	NCA	NCA	7.58
	1990	1.24	NCA	1.68	4.76	4.47	4.42	NCA	3.97	5.25	3.78	3.37	NCA	133.6	196.2	NCA	NCA	7.29
	2000	1.24	NCA	1.68	4.76	4.47	4.42	NCA	3.97	5.25	3.31	2.93	NCA	133.6	196.2	NCA	NCA	7.29
750.0	1980	NCA	NCA	1.20	NCA	4.64	NCA	NCA	NCA	4.05	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.97	4.52	4.38	NCA	NCA	NCA	3.69	NCA	NCA	NCA	NCA	NCA	NCA	NCA	7.58
	1990	1.21	NCA	1.64	4.57	4.34	4.25	NCA	NCA	3.51	3.79	NCA	NCA	134.0	194.4	NCA	NCA	7.29
	2000	1.21	NCA	1.64	4.57	4.34	4.25	NCA	2.83	3.51	3.31	2.94	NCA	134.0	194.4	NCA	NCA	7.29
1000.0	1980	NCA	NCA	1.15	NCA	4.54	NCA	NCA	NCA	3.91	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.32	2.90	1.90	4.42	4.31	NCA	NCA	NCA	3.57	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.18	2.90	1.64	4.45	4.25	4.17	NCA	NCA	3.43	3.81	NCA	NCA	134.0	NCA	NCA	NCA	7.29
	2000	1.18	2.38	1.64	4.45	4.25	4.17	NCA	2.83	3.43	3.31	2.93	NCA	134.0	193.2	NCA	NCA	7.29
5000.0	1980	0.74	NCA	0.95	NCA	4.10	NCA	NCA	NCA	3.45	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.21	2.71	1.61	3.87	3.86	NCA	NCA	NCA	3.16	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.07	2.71	1.44	3.88	3.81	3.68	NCA	NCA	3.04	3.43	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.07	2.21	1.44	3.88	3.81	3.68	NCA	NCA	3.04	3.31	2.93	NCA	133.6	NCA	NCA	NCA	NCA

PARAMETER: LIFE-CYCLE COST, 5% UNITS: 1980 CENTS/kWh

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	127	NCA	NCA	NCA	185.2	269.0	NCA	21.5	21.5
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	120	7.19	NCA	NCA	159.0	230.8	NCA	19.3	19.3
	1990	NCA	NCA	NCA	NCA	NCA	NCA	5.96	6.14	113	6.20	NCA	NCA	135.0	196.1	NCA	18.4	18.4
	2000	NCA	NCA	NCA	NCA	NCA	NCA	5.96	6.14	113	5.50	NCA	4.83	135.0	196.1	135.0	18.4	18.4
5.0	1980	NCA	NCA	NCA	NCA	7.52	NCA	NCA	NCA	33.2	NCA	NCA	NCA	185.6	268.5	NCA	15.0	15.0
	1985	NCA	NCA	NCA	NCA	7.07	NCA	NCA	NCA	31.6	7.21	NCA	NCA	158.9	230.7	NCA	13.2	13.2
	1990	NCA	NCA	NCA	NCA	6.83	NCA	5.91	6.15	29.7	6.19	NCA	NCA	135.3	196.2	NCA	12.6	12.6
	2000	NCA	NCA	NCA	NCA	6.83	NCA	5.91	6.15	29.7	5.50	NCA	4.82	135.3	196.2	135.3	12.6	12.6
20.0	1980	NCA	NCA	NCA	NCA	7.13	NCA	NCA	NCA	17.4	NCA	NCA	NCA	185.7	269.3	NCA	NCA	11.4
	1985	NCA	NCA	NCA	NCA	6.68	NCA	NCA	NCA	16.4	7.21	NCA	NCA	159.0	230.8	NCA	9.75	9.75
	1990	NCA	NCA	NCA	NCA	6.49	NCA	NCA	5.91	15.4	6.17	NCA	NCA	135.3	196.1	NCA	9.38	9.38
	2000	NCA	NCA	NCA	NCA	6.49	NCA	5.66	5.91	15.4	5.50	NCA	4.83	135.3	196.1	135.3	9.38	9.38
30.0	1980	NCA	NCA	NCA	NCA	7.10	NCA	NCA	NCA	15.6	NCA	NCA	NCA	185.6	269.4	NCA	NCA	10.8
	1985	NCA	NCA	NCA	NCA	6.70	NCA	NCA	NCA	14.7	7.22	NCA	NCA	158.9	231.1	NCA	9.15	9.15
	1990	NCA	NCA	NCA	NCA	6.50	NCA	NCA	5.85	13.8	6.19	NCA	NCA	133.6	193.7	NCA	8.82	8.82
	2000	NCA	NCA	NCA	NCA	6.50	NCA	NCA	5.85	13.8	5.51	NCA	4.84	133.6	193.7	133.6	8.82	8.82
60.0	1980	NCA	NCA	NCA	NCA	7.13	NCA	NCA	NCA	13.0	NCA	NCA	NCA	185.8	NCA	NCA	NCA	9.98
	1985	NCA	NCA	NCA	NCA	6.72	NCA	NCA	NCA	12.1	7.22	NCA	NCA	158.9	231.1	NCA	NCA	8.43
	1990	NCA	NCA	NCA	NCA	6.56	NCA	NCA	5.79	11.5	6.20	NCA	NCA	133.8	194.3	NCA	8.11	8.11
	2000	NCA	NCA	3.24	NCA	6.56	NCA	NCA	5.79	11.5	5.52	NCA	NCA	133.8	194.3	NCA	8.11	8.11
100.0	1980	NCA	NCA	NCA	NCA	7.34	NCA	NCA	NCA	11.5	NCA	NCA	NCA	185.8	NCA	NCA	NCA	9.57
	1985	NCA	NCA	NCA	7.02	6.94	NCA	NCA	NCA	10.8	6.79	NCA	NCA	159.0	230.8	NCA	NCA	8.05
	1990	1.84	NCA	2.94	7.05	6.84	NCA	NCA	5.80	10.2	5.96	NCA	NCA	134.0	193.2	NCA	NCA	7.51
	2000	1.84	NCA	2.94	7.05	6.84	NCA	NCA	5.80	10.2	4.95	NCA	NCA	134.0	193.2	NCA	7.51	7.51
250.0	1980	NCA	NCA	NCA	NCA	6.88	NCA	NCA	NCA	9.66	NCA	NCA	NCA	NCA	NCA	NCA	NCA	9.07
	1985	NCA	NCA	NCA	6.66	6.49	NCA	NCA	NCA	9.08	NCA	NCA	NCA	158.9	230.8	NCA	NCA	7.59
	1990	1.73	NCA	2.56	6.67	6.44	5.99	NCA	5.81	8.60	5.83	5.43	NCA	133.8	193.5	NCA	NCA	7.30
	2000	1.73	NCA	2.56	6.67	6.44	5.99	NCA	5.81	8.60	4.81	4.43	NCA	133.8	193.5	NCA	NCA	7.30
500.0	1980	NCA	NCA	1.71	NCA	6.55	NCA	NCA	NCA	8.65	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.92	6.24	6.20	NCA	NCA	NCA	8.00	NCA	NCA	NCA	158.9	NCA	NCA	NCA	7.58
	1990	1.66	NCA	2.32	6.10	6.06	5.71	NCA	5.74	7.60	5.36	4.69	NCA	133.6	196.2	NCA	NCA	7.29
	2000	1.66	NCA	2.32	6.10	6.06	5.71	NCA	5.74	7.60	4.71	4.15	NCA	133.6	196.2	NCA	NCA	7.29
750.0	1980	NCA	NCA	1.62	NCA	6.40	NCA	NCA	NCA	5.80	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.77	5.91	6.02	NCA	NCA	NCA	5.26	NCA	NCA	NCA	NCA	NCA	NCA	NCA	7.58
	1990	1.62	NCA	2.29	5.89	5.90	5.53	NCA	NCA	5.00	5.37	NCA	NCA	134.0	194.4	NCA	NCA	7.29
	2000	1.62	NCA	2.29	5.89	5.90	5.53	NCA	4.02	5.00	4.71	4.15	NCA	134.0	194.4	NCA	NCA	7.29
1000.0	1980	NCA	NCA	1.57	NCA	6.29	NCA	NCA	NCA	5.58	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.80	4.16	2.69	5.79	5.94	NCA	NCA	NCA	5.08	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.60	4.16	2.29	5.76	5.79	5.43	NCA	NCA	4.86	5.40	NCA	NCA	134.0	NCA	NCA	NCA	7.29
	2000	1.60	3.39	2.29	5.76	5.79	5.43	NCA	4.03	4.86	4.71	4.16	NCA	134.0	193.2	NCA	NCA	7.29
5000.0	1980	1.00	NCA	1.32	NCA	5.73	NCA	NCA	NCA	4.81	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.69	3.93	2.30	5.16	5.38	NCA	NCA	NCA	4.38	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.49	3.93	2.04	5.11	5.26	4.87	NCA	NCA	4.20	5.36	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.49	3.19	2.04	5.11	5.26	4.87	NCA	NCA	4.20	4.71	4.15	NCA	133.6	NCA	NCA	NCA	NCA

PARAMETER: LIFE-CYCLE COSTS, 10% UNITS: 1980 CENTS/kWh

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	198	NCA	NCA	NCA	185.2	269.0	NCA	21.5	21.5
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	188	10.3	NCA	NCA	159.0	230.9	NCA	19.3	19.3
	1990	NCA	NCA	NCA	NCA	NCA	NCA	8.91	9.19	176	9.08	NCA	NCA	135.0	196.1	NCA	18.4	18.4
	2000	NCA	NCA	NCA	NCA	NCA	NCA	8.91	9.19	176	8.24	NCA	7.02	135.0	196.1	135.0	18.4	18.4
5.0	1980	NCA	NCA	NCA	NCA	11.4	NCA	NCA	NCA	51.2	NCA	NCA	NCA	185.6	268.5	NCA	15.0	15.0
	1985	NCA	NCA	NCA	NCA	10.7	NCA	NCA	NCA	48.7	10.3	NCA	NCA	158.9	230.7	NCA	13.2	13.2
	1990	NCA	NCA	NCA	NCA	10.3	NCA	8.83	9.21	45.6	9.06	NCA	NCA	135.3	196.2	NCA	12.6	12.6
	2000	NCA	NCA	NCA	NCA	10.3	NCA	8.83	9.21	45.6	8.24	NCA	7.01	135.3	196.2	135.3	12.6	12.6
20.0	1980	NCA	NCA	NCA	NCA	10.7	NCA	NCA	NCA	27.3	NCA	NCA	NCA	185.7	269.3	NCA	NCA	11.4
	1985	NCA	NCA	NCA	NCA	10.0	NCA	NCA	NCA	25.8	10.3	NCA	NCA	159.0	230.8	NCA	9.75	9.75
	1990	NCA	NCA	NCA	NCA	9.67	NCA	NCA	8.98	24.1	9.07	NCA	NCA	135.3	196.1	NCA	9.38	9.38
	2000	NCA	NCA	NCA	NCA	9.67	NCA	8.60	8.98	24.1	8.24	NCA	7.04	135.3	196.1	135.3	9.38	9.38
30.0	1980	NCA	NCA	NCA	NCA	10.6	NCA	NCA	NCA	24.1	NCA	NCA	NCA	185.6	269.4	NCA	NCA	10.8
	1985	NCA	NCA	NCA	NCA	10.0	NCA	NCA	NCA	22.8	10.3	NCA	NCA	158.9	231.1	NCA	9.15	9.15
	1990	NCA	NCA	NCA	NCA	9.64	NCA	NCA	8.91	21.3	9.08	NCA	NCA	133.6	193.7	NCA	8.82	8.82
	2000	NCA	NCA	NCA	NCA	9.64	NCA	NCA	8.91	21.3	8.24	NCA	7.04	133.6	193.7	133.6	8.82	8.82
60.0	1980	NCA	NCA	NCA	NCA	10.6	NCA	NCA	NCA	20.1	NCA	NCA	NCA	185.5	NCA	NCA	NCA	9.98
	1985	NCA	NCA	NCA	NCA	9.90	NCA	NCA	NCA	18.8	10.3	NCA	NCA	158.9	231.1	NCA	NCA	8.43
	1990	NCA	NCA	NCA	NCA	9.59	NCA	NCA	8.84	17.7	9.08	NCA	NCA	133.8	194.3	NCA	8.11	8.11
	2000	NCA	NCA	4.74	NCA	9.59	NCA	NCA	8.84	17.7	8.24	NCA	NCA	133.8	194.3	NCA	8.11	8.11
100.0	1980	NCA	NCA	NCA	NCA	10.7	NCA	NCA	NCA	17.8	NCA	NCA	NCA	185.8	NCA	NCA	NCA	9.57
	1985	NCA	NCA	NCA	9.66	10.0	NCA	NCA	NCA	16.7	9.68	NCA	NCA	159.0	230.8	NCA	NCA	8.05
	1990	2.57	NCA	4.30	9.56	9.80	NCA	NCA	8.86	15.8	8.14	NCA	NCA	134.0	193.2	NCA	NCA	7.51
	2000	2.57	NCA	4.30	9.56	9.80	NCA	NCA	8.86	15.8	7.39	NCA	NCA	134.0	193.2	NCA	7.51	7.51
250.0	1980	NCA	NCA	NCA	NCA	10.1	NCA	NCA	NCA	14.9	NCA	NCA	NCA	NCA	NCA	NCA	NCA	9.07
	1985	NCA	NCA	NCA	9.28	9.46	NCA	NCA	NCA	14.0	NCA	NCA	NCA	158.9	230.8	NCA	NCA	7.59
	1990	2.46	NCA	3.77	9.18	9.19	8.25	NCA	8.87	13.2	8.57	7.87	NCA	133.8	193.5	NCA	NCA	7.30
	2000	2.46	NCA	3.77	9.18	9.19	8.25	NCA	8.87	13.2	7.23	6.62	NCA	133.8	193.5	NCA	NCA	7.30
500.0	1980	NCA	NCA	2.48	NCA	9.65	NCA	NCA	NCA	13.3	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4.38	8.76	9.09	NCA	NCA	NCA	12.3	NCA	NCA	NCA	158.9	NCA	NCA	NCA	7.58
	1990	2.38	NCA	3.44	8.44	8.80	7.93	NCA	8.80	11.7	8.10	6.97	NCA	133.6	196.2	NCA	NCA	7.29
	2000	2.38	NCA	3.44	8.44	8.80	7.93	NCA	8.80	11.7	7.14	6.25	NCA	133.6	196.2	NCA	NCA	7.29
750.0	1980	NCA	NCA	2.35	NCA	9.44	NCA	NCA	NCA	8.83	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4.16	8.31	8.85	NCA	NCA	NCA	7.99	NCA	NCA	NCA	NCA	NCA	NCA	NCA	7.58
	1990	2.35	NCA	3.40	8.18	8.61	7.73	NCA	NCA	7.56	8.11	NCA	NCA	134.0	194.4	NCA	NCA	7.29
	2000	2.35	NCA	3.40	8.18	8.61	7.73	NCA	6.10	7.56	7.13	6.27	NCA	134.0	194.4	NCA	NCA	7.29
1000.0	1980	NCA	NCA	2.28	NCA	9.29	NCA	NCA	NCA	8.47	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.64	6.35	4.05	8.17	8.74	NCA	NCA	NCA	7.68	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.32	6.35	3.42	8.02	8.46	7.61	NCA	NCA	7.34	8.16	NCA	NCA	134.0	NCA	NCA	NCA	7.29
	2000	2.32	5.13	3.42	8.02	8.46	7.61	NCA	6.11	7.34	7.14	6.27	NCA	134.0	193.2	NCA	NCA	7.29
5000.0	1980	1.44	NCA	1.94	NCA	8.56	NCA	NCA	NCA	7.17	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.53	6.05	3.49	7.39	8.00	NCA	NCA	NCA	6.48	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.22	6.05	3.08	7.11	7.78	6.94	NCA	NCA	6.20	8.10	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	2.22	4.88	3.08	7.11	7.78	6.94	NCA	NCA	6.20	7.14	6.25	NCA	133.6	NCA	NCA	NCA	NCA

PARAMETER: START-UP TIME UNITS: MINUTES

		GAS TURBINES			DIESEL			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	30	NCA	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	30	40	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	1990	NCA	NCA	NCA	NCA	NCA	NCA	0.25	0.25	30	40	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	2000	NCA	NCA	NCA	NCA	NCA	NCA	0.25	0.25	30	40	NCA	40	5	5	5	1.67E-01	1.67E-01
5.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	1985	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	40	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	1990	NCA	NCA	NCA	NCA	2	NCA	0.25	0.25	30	40	NCA	NCA	5	5	NCA	1.67E-01	1.67E-01
	2000	NCA	NCA	NCA	NCA	2	NCA	0.25	0.25	30	40	NCA	40	5	5	5	1.67E-01	1.67E-01
20.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	5	NCA	NCA	1.00
	1985	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	45	NCA	NCA	5	5	NCA	1.00	1.00
	1990	NCA	NCA	NCA	NCA	2	NCA	NCA	0.25	30	45	NCA	NCA	5	5	NCA	1.00	1.00
	2000	NCA	NCA	NCA	NCA	2	NCA	0.25	0.25	30	45	NCA	40	5	5	5	1.00	1.00
30.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	5	NCA	NCA	1.00
	1985	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	60	NCA	NCA	5	5	NCA	1.00	1.00
	1990	NCA	NCA	NCA	NCA	2	NCA	NCA	0.25	30	60	NCA	NCA	5	5	NCA	1.00	1.00
	2000	NCA	NCA	NCA	NCA	2	NCA	NCA	0.25	30	60	NCA	40	5	5	5	1.00	1.00
60.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	NCA	NCA	NCA	2.00
	1985	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	60	NCA	NCA	5	5	NCA	NCA	2.00
	1990	NCA	NCA	NCA	NCA	2	NCA	NCA	0.25	30	60	NCA	NCA	5	5	NCA	2.00	2.00
	2000	NCA	NCA	1.0	NCA	2	NCA	NCA	0.25	30	60	NCA	NCA	5	5	NCA	2.00	2.00
100.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	NCA	NCA	NCA	2.00
	1985	NCA	NCA	NCA	2	2	NCA	NCA	NCA	30	120	NCA	NCA	5	5	NCA	NCA	2.00
	1990	1.0	NCA	1.0	2	2	NCA	NCA	0.25	30	120	NCA	NCA	5	5	NCA	NCA	2.00
	2000	1.0	NCA	1.0	2	2	NCA	NCA	0.25	30	120	NCA	NCA	5	5	NCA	2.00	2.00
250.0	1980	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5.00
	1985	NCA	NCA	NCA	2	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	5	NCA	NCA	5.00
	1990	1.0	NCA	1.0	2	2	2	NCA	0.25	30	120	180	NCA	5	5	NCA	NCA	5.00
	2000	1.0	NCA	1.0	2	2	2	NCA	0.25	30	120	180	NCA	5	5	NCA	NCA	5.00
500.0	1980	NCA	NCA	1.0	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.0	2	2	NCA	NCA	NCA	30	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1990	1.0	NCA	1.0	2	2	2	NCA	0.25	30	150	180	NCA	5	5	NCA	NCA	5
	2000	1.0	NCA	1.0	2	2	2	NCA	0.25	30	150	180	NCA	5	5	NCA	NCA	5
750.0	1980	NCA	NCA	1.0	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.0	2	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5
	1990	1.0	NCA	1.0	2	2	2	NCA	NCA	30	150	NCA	NCA	5	5	NCA	NCA	5
	2000	1.0	NCA	1.0	2	2	2	NCA	0.25	30	150	200	NCA	5	5	NCA	NCA	5
1000.0	1980	NCA	NCA	1.0	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.0	1.0	1.0	2	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.0	1.0	1.0	2	2	2	NCA	NCA	30	180	NCA	NCA	5	NCA	NCA	NCA	5.00
	2000	1.0	1.0	1.0	2	2	2	NCA	0.25	30	180	200	NCA	5	5	NCA	NCA	5.00
5000.0	1980	1.0	NCA	1.0	NCA	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.0	1.0	1.0	2	2	NCA	NCA	NCA	30	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.0	1.0	1.0	2	2	2	NCA	NCA	30	180	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.0	1.0	1.0	2	2	2	NCA	NCA	30	180	200	NCA	5	NCA	NCA	NCA	NCA

PARAMETER: SHUT-DOWN TIME UNITS: MINUTES

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	30	NCA	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	1990	NCA	NCA	NCA	NCA	NCA	NCA	8.33E-02	8.33E-02	30	30	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	2000	NCA	NCA	NCA	NCA	NCA	NCA	8.33E-02	8.33E-02	30	30	NCA	30	1	1	1	1.67E-01	1.67E-01
5.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	NCA	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	1985	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	1990	NCA	NCA	NCA	NCA	3.33E-02	NCA	8.33E-02	8.33E-02	30	30	NCA	NCA	1	1	NCA	1.67E-01	1.67E-01
	2000	NCA	NCA	NCA	NCA	3.33E-02	NCA	8.33E-02	8.33E-02	30	30	NCA	30	1	1	1	1.67E-01	1.67E-01
20.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	NCA	NCA	NCA	1	1	NCA	NCA	1.00
	1985	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	1.00	1.00
	1990	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	1.00	1.00
	2000	NCA	NCA	NCA	NCA	3.33E-02	NCA	8.33E-02	8.33E-02	30	30	NCA	30	1	1	1	1.00	1.00
30.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	NCA	NCA	NCA	1	1	NCA	NCA	1.00
	1985	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	1.00	1.00
	1990	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	1.00	1.00
	2000	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	30	1	1	1	1.00	1.00
60.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	NCA	NCA	NCA	1	NCA	NCA	NCA	2.00
	1985	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	NCA	2.00
	1990	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	2.00	2.00
	2000	NCA	NCA	2.0	NCA	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	2.00	2.00
100.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30	NCA	NCA	NCA	1	NCA	NCA	NCA	2.00
	1985	NCA	NCA	NCA	3.33E-02	3.33E-02	NCA	NCA	NCA	30	30	NCA	NCA	1	1	NCA	NCA	2.00
	1990	2.0	NCA	2.0	3.33E-02	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	NCA	2.00
	2000	2.0	NCA	2.0	3.33E-02	3.33E-02	NCA	NCA	8.33E-02	30	30	NCA	NCA	1	1	NCA	2.00	2.00
250.0	1980	NCA	NCA	NCA	NCA	3.33E-02	NCA	NCA	NCA	30.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5.00
	1985	NCA	NCA	NCA	3.33E-02	3.33E-02	NCA	NCA	NCA	30.0	NCA	NCA	NCA	1	1	NCA	NCA	5.00
	1990	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	30.0	60	150	NCA	1	1	NCA	NCA	5.00
	2000	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	30.0	60	150	NCA	1	1	NCA	NCA	5.00
500.0	1980	NCA	NCA	2.0	NCA	3.33E-02	NCA	NCA	NCA	30.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.0	3.33E-02	3.33E-02	NCA	NCA	NCA	30.0	NCA	NCA	NCA	1	NCA	NCA	NCA	5.00
	1990	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	30.0	90	180	NCA	1	1	NCA	NCA	5.00
	2000	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	30.0	90	180	NCA	1	1	NCA	NCA	5.00
750.0	1980	NCA	NCA	2.0	NCA	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.0	3.33E-02	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5.00
	1990	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	NCA	60.0	90	NCA	NCA	1	1	NCA	NCA	5.00
	2000	2.0	NCA	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	60.0	90	180	NCA	1	1	NCA	NCA	5.00
1000.0	1980	NCA	NCA	2.0	NCA	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.0	2.0	2.0	3.33E-02	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.0	2.0	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	NCA	60.0	120	NCA	NCA	1	NCA	NCA	NCA	5.00
	2000	2.0	2.0	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	8.33E-02	60.0	120	200	NCA	1	1	NCA	NCA	5.00
5000.0	1980	2.0	NCA	2.0	NCA	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.0	2.0	2.0	3.33E-02	3.33E-02	NCA	NCA	NCA	60.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.0	2.0	2.0	3.33E-02	3.33E-02	3.33 E-02	NCA	NCA	60.0	150	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	2.0	2.0	2.0	3.33E-02	3.33E-02	3.33E-02	NCA	NCA	60.0	150	240	NCA	1	NCA	NCA	NCA	NCA

PARAMETER: SYSTEM VOLUME UNITS: CUBIC FEET

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	144	NCA	NCA	NCA	1.96E05	2.94E05	NCA	1.98E02	3.96E02
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	144	3.6	NCA	NCA	1.96E05	2.94E05	NCA	1.98E02	3.96E02
	1990	NCA	NCA	NCA	NCA	NCA	NCA	7.05	7.05	144	3.0	NCA	NCA	1.96E05	2.94E05	NCA	1.98E02	3.96E02
	2000	NCA	NCA	NCA	NCA	NCA	NCA	7.05	7.05	144	3.0	NCA	3.0	1.96E05	2.94E05	1.96E05	1.98E02	3.96E02
5.0	1980	NCA	NCA	NCA	NCA	1.55E01	NCA	NCA	NCA	144	NCA	NCA	NCA	6.53E05	9.80E05	NCA	7.00E02	1.40E03
	1985	NCA	NCA	NCA	NCA	1.55E01	NCA	NCA	NCA	144	12.0	NCA	NCA	6.53E05	9.80E05	NCA	7.00E02	1.40E03
	1990	NCA	NCA	NCA	NCA	1.55E01	NCA	1.71E01	1.71E01	144	10.0	NCA	NCA	6.53E05	9.80E05	NCA	7.00E02	1.40E03
	2000	NCA	NCA	NCA	NCA	1.55E01	NCA	1.71E01	1.71E01	144	10.0	NCA	10.0	6.53E05	9.80E05	6.53E05	7.00E02	1.40E03
20.0	1980	NCA	NCA	NCA	NCA	4.02E01	NCA	NCA	NCA	144	NCA	NCA	NCA	2.61E06	3.92E05	NCA	NCA	1.03E04
	1985	NCA	NCA	NCA	NCA	4.02E01	NCA	NCA	NCA	144	45	NCA	NCA	2.61E06	3.92E05	NCA	5.15E02	1.03E04
	1990	NCA	NCA	NCA	NCA	4.02E01	NCA	NCA	4.42E01	144	40	NCA	NCA	2.61E06	3.92E05	NCA	5.15E02	1.03E04
	2000	NCA	NCA	NCA	NCA	4.02E01	NCA	4.42E01	4.42E01	144	40	NCA	40.0	2.61E06	3.92E05	2.61E06	5.15E02	1.03E04
30.0	1980	NCA	NCA	NCA	NCA	5.24E01	NCA	NCA	NCA	192	NCA	NCA	NCA	3.92E06	5.88E06	NCA	NCA	1.85E04
	1985	NCA	NCA	NCA	NCA	5.24E01	NCA	NCA	NCA	192	210	NCA	NCA	3.92E06	5.88E06	NCA	9.26E02	1.85E04
	1990	NCA	NCA	NCA	NCA	5.24E01	NCA	NCA	5.76E01	192	180	NCA	NCA	3.92E06	5.88E06	NCA	9.26E02	1.85E04
	2000	NCA	NCA	NCA	NCA	5.24E01	NCA	NCA	5.76E01	192	180	NCA	180	3.92E06	5.88E06	3.92E06	9.26E02	1.85E04
60.0	1980	NCA	NCA	NCA	NCA	8.11E01	NCA	NCA	NCA	400	NCA	NCA	NCA	7.84E06	NCA	NCA	NCA	5.02E04
	1985	NCA	NCA	NCA	NCA	8.11E01	NCA	NCA	NCA	400	420	NCA	NCA	7.84E06	1.18E07	NCA	NCA	5.02E04
	1990	NCA	NCA	NCA	NCA	8.11E01	NCA	NCA	8.92E01	400	340	NCA	NCA	7.84E06	1.18E07	NCA	2.51E03	5.02E04
	2000	NCA	NCA	3.58E01	NCA	8.11E01	NCA	NCA	8.92E01	400	340	NCA	NCA	7.84E06	1.18E07	NCA	2.51E03	5.02E04
100.0	1980	NCA	NCA	NCA	NCA	1.11E02	NCA	NCA	NCA	720	NCA	NCA	NCA	1.31E07	NCA	NCA	NCA	1.04E05
	1985	NCA	NCA	NCA	1.11E02	1.11E02	NCA	NCA	NCA	720	700	NCA	NCA	1.31E07	1.96E07	NCA	NCA	1.04E05
	1990	4.86E01	NCA	4.5E01	1.11E02	1.11E02	NCA	NCA	1.22E02	720	650	NCA	NCA	1.31E07	1.96E07	NCA	NCA	1.04E05
	2000	4.86E01	NCA	4.5E01	1.11E02	1.11E02	NCA	NCA	1.22E02	720	650	NCA	NCA	1.31E07	1.96E07	NCA	5.02E04	1.04E05
250.0	1980	NCA	NCA	NCA	NCA	1.91E02	NCA	NCA	NCA	1408	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3.88E05
	1985	NCA	NCA	NCA	1.91E02	1.91E02	NCA	NCA	NCA	1408	NCA	NCA	NCA	3.26E07	4.96E07	NCA	NCA	3.88E05
	1990	1.12E02	NCA	8.45E01	1.91E02	1.91E02	1.72E02	NCA	2.10E02	1408	2000	2000	NCA	3.26E07	4.96E07	NCA	NCA	3.88E05
	2000	1.12E02	NCA	8.45E01	1.91E02	1.91E02	1.72E02	NCA	2.10E02	1408	2000	2000	NCA	3.26E07	4.96E07	NCA	NCA	3.88E05
500.0	1980	NCA	NCA	1.14E02	NCA	2.93E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.14E02	2.93E02	2.93E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	6.53E07	NCA	NCA	NCA	7.76E05
	1990	1.30E02	NCA	1.14E02	2.93E02	2.93E02	2.63E02	NCA	3.22E02	2880	4.0E03	4.0E03	NCA	6.53E07	9.80E07	NCA	NCA	7.76E05
	2000	1.30E02	NCA	1.14E02	2.93E02	2.93E02	2.63E02	NCA	3.22E02	2880	4.0E03	4.0E03	NCA	6.53E07	9.80E07	NCA	NCA	7.76E05
750.0	1980	NCA	NCA	1.42E02	NCA	3.87E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.42E02	3.87E02	3.87E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.16E06
	1990	1.65E02	NCA	1.42E02	3.87E02	3.87E02	3.48E02	NCA	NCA	2880	6.0E03	NCA	NCA	9.79E07	1.47E08	NCA	NCA	1.16E06
	2000	1.65E02	NCA	1.42E02	3.87E02	3.87E02	3.48E02	NCA	4.26E02	2880	6.0E03	6.0E03	NCA	9.79E07	1.47E08	NCA	NCA	1.16E06
1000.0	1980	NCA	NCA	1.46E02	NCA	4.81E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.72E02	1.89E02	1.46E02	4.81E02	4.81E01	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.72E02	1.89E02	1.46E02	4.81E02	4.81E02	4.33E02	NCA	NCA	2880	1.0E04	NCA	NCA	1.31E08	NCA	NCA	NCA	1.04E06
	2000	1.72E02	1.89E02	1.46E02	4.81E02	4.81E02	4.33E02	NCA	5.29E02	2880	1.0E04	1.0E04	NCA	1.31E08	1.96E08	NCA	NCA	1.04E06
5000.0	1980	2.08E02	NCA	1.73E02	NCA	2.57E03	NCA	NCA	NCA	5760	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.08E02	2.29E02	1.73E02	2.57E03	2.57E03	NCA	NCA	NCA	5760	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.08E02	2.29E02	1.73E02	2.57E03	2.57E03	2.31E03	NCA	NCA	5760	1.25E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	2.08E02	2.29E02	1.73E02	2.57E03	2.57E03	2.31E03	NCA	NCA	5760	1.25E05	1.25E05	NCA	6.53E08	NCA	NCA	NCA	NCA

PARAMETER: VOLUME (ex. B.O.P.) UNITS: CUBIC FEET

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	144	NCA	NCA	NCA	1.96E04	2.94E04	NCA	1.98E02	3.96E02
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	144	1.5	NCA	NCA	1.96E04	2.94E04	NCA	1.98E02	3.96E02
	1990	NCA	NCA	NCA	NCA	NCA	NCA	7.20E-01	1.44	144	1.1	NCA	NCA	1.96E04	2.94E04	NCA	1.98E02	3.96E02
	2000	NCA	NCA	NCA	NCA	NCA	NCA	7.20E-01	1.44	144	1.1	NCA	1.0	1.96E04	2.94E04	1.96E04	1.98E02	3.96E02
5.0	1980	NCA	NCA	NCA	NCA	3.97	NCA	NCA	NCA	144	NCA	NCA	NCA	6.53E04	9.80E04	NCA	4.66E02	9.31E02
	1985	NCA	NCA	NCA	NCA	3.97	NCA	NCA	NCA	144	4.2	NCA	NCA	6.53E04	9.80E04	NCA	4.66E02	9.31E02
	1990	NCA	NCA	NCA	NCA	3.97	NCA	2.40	4.80	144	3.3	NCA	NCA	6.53E04	9.80E04	NCA	4.66E02	9.31E02
	2000	NCA	NCA	NCA	NCA	3.97	NCA	2.40	4.80	144	3.3	NCA	3.0	6.53E04	9.80E04	6.53E04	4.66E02	9.31E02
20.0	1980	NCA	NCA	NCA	NCA	1.07E01	NCA	NCA	NCA	144	NCA	NCA	NCA	2.61E05	3.92E05	NCA	NCA	2.24E03
	1985	NCA	NCA	NCA	NCA	1.07E01	NCA	NCA	NCA	144	6.5	NCA	NCA	2.61E05	3.92E05	NCA	1.12E03	2.24E03
	1990	NCA	NCA	NCA	NCA	1.07E01	NCA	NCA	6.20	144	4.8	NCA	NCA	2.61E05	3.92E05	NCA	1.12E03	2.24E03
	2000	NCA	NCA	NCA	NCA	1.07E01	NCA	3.60	6.20	144	4.8	NCA	4.2	2.61E05	3.92E05	2.61E05	1.12E03	2.24E03
30.0	1980	NCA	NCA	NCA	NCA	1.42E01	NCA	NCA	NCA	192	NCA	NCA	NCA	3.92E05	5.88E05	NCA	NCA	4.20E03
	1985	NCA	NCA	NCA	NCA	1.42E01	NCA	NCA	NCA	192	10.0	NCA	NCA	3.92E05	5.88E05	NCA	2.10E03	4.20E03
	1990	NCA	NCA	NCA	NCA	1.42E01	NCA	NCA	9.30	192	8.0	NCA	NCA	3.92E05	5.88E05	NCA	2.10E03	4.20E03
	2000	NCA	NCA	NCA	NCA	1.42E01	NCA	NCA	9.30	192	8.0	NCA	7.2	3.92E05	5.88E05	3.92E05	2.10E03	4.20E03
60.0	1980	NCA	NCA	NCA	NCA	2.27E01	NCA	NCA	NCA	400	NCA	NCA	NCA	7.84E05	NCA	NCA	NCA	1.14E04
	1985	NCA	NCA	NCA	NCA	2.27E01	NCA	NCA	NCA	400	20.0	NCA	NCA	7.84E05	1.18E06	NCA	NCA	1.14E04
	1990	NCA	NCA	NCA	NCA	2.27E01	NCA	NCA	1.86E01	400	16.0	NCA	NCA	7.84E05	1.18E06	NCA	5.70E03	1.14E04
	2000	NCA	NCA	1.43E01	NCA	2.27E01	NCA	NCA	1.86E01	400	16.0	NCA	NCA	7.84E05	1.18E06	NCA	5.70E03	1.14E04
100.0	1980	NCA	NCA	NCA	NCA	3.18E01	NCA	NCA	NCA	720	NCA	NCA	NCA	1.31E06	NCA	NCA	NCA	2.27E04
	1985	NCA	NCA	NCA	3.18E01	3.18E01	NCA	NCA	NCA	720	34.0	NCA	NCA	1.31E06	1.96E06	NCA	NCA	2.27E04
	1990	2.16E01	NCA	1.8E01	3.18E01	3.18E01	NCA	NCA	3.10E01	720	28.0	NCA	NCA	1.31E06	1.96E06	NCA	NCA	2.27E04
	2000	2.16E01	NCA	1.8E01	3.18E01	3.18E01	NCA	NCA	3.10E01	720	28.0	NCA	NCA	1.31E06	1.96E06	NCA	1.14E04	2.27E04
250.0	1980	NCA	NCA	NCA	NCA	5.85E01	NCA	NCA	NCA	1408	NCA	NCA	NCA	NCA	NCA	NCA	NCA	8.48E04
	1985	NCA	NCA	NCA	5.85E01	5.85E01	NCA	NCA	NCA	1408	NCA	NCA	NCA	3.26E06	4.90E06	NCA	NCA	8.48E04
	1990	4.39E01	NCA	3.38E01	5.85E01	5.85E01	5.27E01	NCA	7.75E01	1408	56.0	68	NCA	3.26E06	4.90E06	NCA	NCA	8.48E04
	2000	4.39E01	NCA	3.38E01	5.85E01	5.85E01	5.27E01	NCA	7.75E01	1408	56.0	68	NCA	3.26E06	4.90E06	NCA	NCA	8.48E04
500.0	1980	NCA	NCA	4.55E01	NCA	9.45E01	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4.55E01	9.45E01	9.45E01	NCA	NCA	NCA	2880	NCA	NCA	NCA	6.53E06	NCA	NCA	NCA	1.69E05
	1990	6.14E01	NCA	4.55E01	9.45E01	9.45E01	8.50E01	NCA	1.55E02	2880	104	124	NCA	6.53E06	9.80E06	NCA	NCA	1.69E05
	2000	6.14E01	NCA	4.55E01	9.45E01	9.45E01	8.50E01	NCA	1.55E02	2880	104	124	NCA	6.53E06	9.80E06	NCA	NCA	1.69E05
750.0	1980	NCA	NCA	5.69E01	NCA	1.28E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5.69E01	1.28E02	1.28E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.54E05
	1990	7.97E01	NCA	5.69E01	1.28E02	1.28E02	1.15E02	NCA	NCA	2880	156	NCA	NCA	9.79E06	1.47E07	NCA	NCA	2.54E05
	2000	7.97E01	NCA	5.69E01	1.28E02	1.28E02	1.15E02	NCA	233	2880	156	186	NCA	9.79E06	1.47E07	NCA	NCA	2.54E05
1000.0	1980	NCA	NCA	5.82E01	NCA	1.60E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	8.44E01	9.28E01	5.82E01	1.60E02	1.60E02	NCA	NCA	NCA	2880	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	8.44E01	9.28E01	5.82E01	1.60E02	1.60E02	1.44E02	NCA	NCA	2880	208	NCA	NCA	1.31E07	NCA	NCA	NCA	2.27E05
	2000	8.44E01	9.28E01	5.82E01	1.60E02	1.60E02	1.44E02	NCA	3.10E02	2880	208	248	NCA	1.31E07	1.96E07	NCA	NCA	2.27E05
5000.0	1980	1.04E02	NCA	6.9E01	NCA	7.84E02	NCA	NCA	NCA	5760	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.04E02	1.14E02	6.9E01	7.84E02	7.84E02	NCA	NCA	NCA	5760	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.04E02	1.14E02	6.9E01	7.84E02	7.84E02	8.50E02	NCA	NCA	5760	1260	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.04E02	1.14E02	6.9E01	7.94E02	7.84E02	8.50E02	NCA	NCA	5760	1260	1530	NCA	6.53E07	NCA	NCA	NCA	NCA

PARAMETER: AREA UNITS: SQUARE FEET

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
		REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	36	NCA	NCA	NCA	1.97E03	2.96E03	NCA	3.6E01	3.6E01
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	36	3	NCA	NCA	1.97E03	2.96E03	NCA	3.6E01	3.6E01
	1990	NCA	NCA	NCA	NCA	NCA	NCA	3.21	3.21	36	2	NCA	NCA	1.97E03	2.96E03	NCA	3.6E01	3.6E01
	2000	NCA	NCA	NCA	NCA	NCA	NCA	3.21	3.21	36	2	NCA	2	1.97E03	2.96E03	1.97E03	3.6E01	3.6E01
5.0	1980	NCA	NCA	NCA	NCA	7.75	NCA	NCA	NCA	36	NCA	NCA	NCA	6.59E03	9.86E03	NCA	7.35E01	7.35E01
	1985	NCA	NCA	NCA	NCA	7.75	NCA	NCA	NCA	36	9	NCA	NCA	6.59E03	9.86E03	NCA	7.35E01	7.35E01
	1990	NCA	NCA	NCA	NCA	7.75	NCA	7.75	7.75	36	6	NCA	NCA	6.59E03	9.86E03	NCA	7.35E01	7.35E01
	2000	NCA	NCA	NCA	NCA	7.75	NCA	7.75	7.75	36	6	NCA	6	6.59E03	9.86E03	6.59E03	7.35E01	7.35E01
20.0	1980	NCA	NCA	NCA	NCA	2.01E01	NCA	NCA	NCA	36	NCA	NCA	NCA	2.63E04	3.94E04	NCA	NCA	2.94E02
	1985	NCA	NCA	NCA	NCA	2.01E01	NCA	NCA	NCA	36	24	NCA	NCA	2.63E04	3.94E04	NCA	2.94E02	2.94E02
	1990	NCA	NCA	NCA	NCA	2.01E01	NCA	NCA	2.01E01	36	18	NCA	NCA	2.63E04	3.94E04	NCA	2.94E02	2.94E02
	2000	NCA	NCA	NCA	NCA	2.01E01	NCA	2.01E01	2.01E01	36	18	NCA	18	2.63E04	3.94E04	2.63E04	2.94E02	2.94E02
30.0	1980	NCA	NCA	NCA	NCA	2.62E02	NCA	NCA	NCA	48	NCA	NCA	NCA	3.95E04	5.91E04	NCA	NCA	4.41E02
	1985	NCA	NCA	NCA	NCA	2.62E02	NCA	NCA	NCA	48	36	NCA	NCA	3.95E04	5.91E04	NCA	4.41E02	4.41E02
	1990	NCA	NCA	NCA	NCA	2.62E02	NCA	NCA	2.62E01	48	24	NCA	NCA	3.95E04	5.91E04	NCA	4.41E02	4.41E02
	2000	NCA	NCA	NCA	NCA	2.62E02	NCA	NCA	2.62E01	48	24	NCA	24	3.95E04	5.91E04	3.95E04	4.41E02	4.41E02
60.0	1980	NCA	NCA	NCA	NCA	2.70E01	NCA	NCA	NCA	80	NCA	NCA	NCA	7.91E04	NCA	NCA	NCA	8.82E02
	1985	NCA	NCA	NCA	NCA	2.70E01	NCA	NCA	NCA	80	65	NCA	NCA	7.91E04	1.19E05	NCA	NCA	8.82E02
	1990	NCA	NCA	NCA	NCA	2.70E01	NCA	NCA	2.70E01	80	45	NCA	NCA	7.91E04	1.19E05	NCA	8.82E02	8.82E02
	2000	NCA	NCA	1.80E01	NCA	2.70E01	NCA	NCA	2.70E01	80	45	NCA	NCA	7.91E04	1.19E05	NCA	8.82E02	8.82E02
100.0	1980	NCA	NCA	NCA	NCA	3.70E01	NCA	NCA	NCA	120	NCA	NCA	NCA	1.32E05	NCA	NCA	NCA	1.47E03
	1985	NCA	NCA	NCA	3.70E01	3.70E01	NCA	NCA	NCA	120	100	NCA	NCA	1.32E05	1.97E05	NCA	NCA	1.47E03
	1990	2.61E01	NCA	2.45E01	3.70E01	3.70E01	NCA	NCA	3.70E01	120	70	NCA	NCA	1.32E05	1.97E05	NCA	NCA	1.47E03
	2000	2.61E01	NCA	2.45E01	3.70E01	3.70E01	NCA	NCA	3.70E01	120	70	NCA	NCA	1.32E05	1.97E05	NCA	1.47E02	1.47E03
250.0	1980	NCA	NCA	NCA	NCA	4.78E01	NCA	NCA	NCA	176	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3.66E03
	1985	NCA	NCA	NCA	4.78E01	4.78E01	NCA	NCA	NCA	176	NCA	NCA	NCA	3.29E05	4.93E05	NCA	NCA	3.66E03
	1990	4.56E01	NCA	4.28E01	4.78E01	4.78E01	4.30E01	NCA	4.78E01	176	200	210	NCA	3.29E05	4.93E05	NCA	NCA	3.66E03
	2000	4.56E01	NCA	4.28E01	4.78E01	4.78E01	4.30E01	NCA	4.78E01	176	200	210	NCA	3.29E05	4.93E05	NCA	NCA	3.66E03
500.0	1980	NCA	NCA	6.54E01	NCA	7.33E01	NCA	NCA	NCA	184	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	6.54E01	7.33E01	7.33E01	NCA	NCA	NCA	184	NCA	NCA	NCA	6.59E05	NCA	NCA	NCA	7.35E03
	1990	6.97E01	NCA	6.54E01	7.33E01	7.33E01	6.58E01	NCA	7.33E01	184	400	400	NCA	6.59E05	9.86E05	NCA	NCA	7.35E03
	2000	6.97E01	NCA	6.54E01	7.33E01	7.33E01	6.58E01	NCA	7.33E01	184	400	400	NCA	6.59E05	9.86E05	NCA	NCA	7.35E03
750.0	1980	NCA	NCA	8.40E01	NCA	9.68E01	NCA	NCA	NCA	192	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	8.40E01	9.68E01	9.68E01	NCA	NCA	NCA	192	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.10E04
	1990	8.95E01	NCA	8.40E01	9.68E01	9.68E01	8.70E01	NCA	9.68E01	192	550	NCA	NCA	9.88E05	1.48E06	NCA	NCA	1.10E04
	2000	8.95E01	NCA	8.40E01	9.68E01	9.68E01	8.70E01	NCA	9.68E01	192	550	550	NCA	9.88E05	1.48E06	NCA	NCA	1.10E04
1000.0	1980	NCA	NCA	1.00E02	NCA	1.20E02	NCA	NCA	NCA	256	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.07E02	1.16E02	1.00E02	1.20E02	1.20E02	NCA	NCA	NCA	256	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.07E02	1.16E02	1.00E02	1.20E02	1.20E02	1.08E02	NCA	NCA	256	700	NCA	NCA	1.32E06	NCA	NCA	NCA	1.47E04
	2000	1.07E02	1.16E02	1.00E02	1.20E02	1.20E02	1.08E02	NCA	1.20E02	256	700	700	NCA	1.32E06	1.97E06	NCA	NCA	1.47E04
5000.0	1980	2.83E02	NCA	2.66E02	NCA	5.14E02	NCA	NCA	NCA	384	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	2.83E02	3.09E02	2.66E02	5.14E02	5.14E02	NCA	NCA	NCA	384	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	2.83E02	3.09E02	2.66E02	5.14E02	5.14E02	4.63E02	NCA	NCA	384	6.0E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	2.83E02	3.09E02	2.66E02	5.14E02	5.14E02	4.63E02	NCA	NCA	384	6.0E03	6.0E03	NCA	6.59E06	NCA	NCA	NCA	NCA

PARAMETER: AREA (ex. B.O.P.) UNITS: SQUARE FEET

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	36	NCA	NCA	NCA	1.96E03	2.94E03	NCA	3.6E01	3.6E01
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	36	1.4	NCA	NCA	1.96E03	2.94E03	NCA	3.6E01	3.6E01
	1990	NCA	NCA	NCA	NCA	NCA	NCA	4.8E-01	4.80E-01	36	1.1	NCA	NCA	1.96E03	2.94E03	NCA	3.6E01	3.6E01
	2000	NCA	NCA	NCA	NCA	NCA	NCA	4.8E-01	4.80E-01	36	1.1	NCA	0.8	1.96E03	2.94E03	1.96E03	3.6E01	3.6E01
5.0	1980	NCA	NCA	NCA	NCA	1.99	NCA	NCA	NCA	36	NCA	NCA	NCA	6.53E03	9.80E03	NCA	4.9E01	4.9E01
	1985	NCA	NCA	NCA	NCA	1.99	NCA	NCA	NCA	36	1.4	NCA	NCA	6.53E03	9.80E03	NCA	4.9E01	4.9E01
	1990	NCA	NCA	NCA	NCA	1.99	NCA	1.67	1.67	36	1.1	NCA	NCA	6.53E03	9.80E03	NCA	4.9E01	4.9E01
	2000	NCA	NCA	NCA	NCA	1.99	NCA	1.67	1.67	36	1.1	NCA	0.8	6.53E03	9.80E03	6.53E03	4.9E01	4.9E01
20.0	1980	NCA	NCA	NCA	NCA	5.35	NCA	NCA	NCA	36	NCA	NCA	NCA	2.61E04	3.92E04	NCA	NCA	6.4E01
	1985	NCA	NCA	NCA	NCA	5.35	NCA	NCA	NCA	36	2.2	NCA	NCA	2.61E04	3.92E04	NCA	6.4E01	6.4E01
	1990	NCA	NCA	NCA	NCA	5.35	NCA	NCA	1.74	36	1.6	NCA	NCA	2.61E04	3.92E04	NCA	6.4E01	6.4E01
	2000	NCA	NCA	NCA	NCA	5.35	NCA	1.74	1.74	36	1.6	NCA	0.8	2.61E04	3.92E04	2.61E04	6.4E01	6.4E01
30.0	1980	NCA	NCA	NCA	NCA	7.10	NCA	NCA	NCA	48	NCA	NCA	NCA	3.92E04	5.88E04	NCA	NCA	1.00E02
	1985	NCA	NCA	NCA	NCA	7.10	NCA	NCA	NCA	48	2.2	NCA	NCA	3.92E04	5.88E04	NCA	1.00E02	1.00E02
	1990	NCA	NCA	NCA	NCA	7.10	NCA	NCA	7.10	48	1.6	NCA	NCA	3.92E04	5.88E04	NCA	1.00E02	1.00E02
	2000	NCA	NCA	NCA	NCA	7.10	NCA	NCA	7.10	48	1.6	NCA	0.8	3.92E04	5.88E04	3.92E04	1.00E02	1.00E02
60.0	1980	NCA	NCA	NCA	NCA	7.56	NCA	NCA	NCA	80	NCA	NCA	NCA	7.84E04	NCA	NCA	NCA	2.00E02
	1985	NCA	NCA	NCA	NCA	7.56	NCA	NCA	NCA	80	2.2	NCA	NCA	7.84E04	1.18E05	NCA	NCA	2.00E02
	1990	NCA	NCA	NCA	NCA	7.56	NCA	NCA	7.56	80	1.6	NCA	NCA	7.84E04	1.18E05	NCA	2.00E02	2.00E02
	2000	NCA	NCA	7.06	NCA	7.56	NCA	NCA	7.56	80	1.6	NCA	NCA	7.84E04	1.18E05	NCA	2.00E02	2.00E02
100.0	1980	NCA	NCA	NCA	NCA	1.06E01	NCA	NCA	NCA	120	NCA	NCA	NCA	1.31E05	NCA	NCA	NCA	3.20E02
	1985	NCA	NCA	NCA	1.06E01	1.06E01	NCA	NCA	NCA	120	4.4	NCA	NCA	1.31E05	1.96E05	NCA	NCA	3.20E02
	1990	9.45	NCA	8.87	1.06E01	1.06E01	NCA	NCA	3.10	120	3.2	NCA	NCA	1.31E05	1.96E05	NCA	NCA	3.20E02
	2000	9.45	NCA	8.87	1.06E01	1.06E01	NCA	NCA	3.10	120	3.2	NCA	NCA	1.31E05	1.96E05	NCA	3.20E02	3.20E02
250.0	1980	NCA	NCA	NCA	NCA	1.46E01	NCA	NCA	NCA	176	NCA	NCA	NCA	NCA	NCA	NCA	NCA	8.00E02
	1985	NCA	NCA	NCA	1.46E01	1.46E01	NCA	NCA	NCA	176	NCA	NCA	NCA	3.26E05	4.90E05	NCA	NCA	8.00E02
	1990	13.8	NCA	13.0	1.46E01	1.46E01	1.32E01	NCA	7.75	176	6.4	4.0	NCA	3.26E05	4.90E05	NCA	NCA	8.00E02
	2000	13.8	NCA	13.0	1.46E01	1.46E01	1.32E01	NCA	7.75	176	6.4	4.0	NCA	3.26E05	4.90E05	NCA	NCA	8.00E02
500.0	1980	NCA	NCA	1.75E01	NCA	2.36E01	NCA	NCA	NCA	184	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.75E01	2.36E01	2.36E01	NCA	NCA	NCA	184	NCA	NCA	NCA	6.53E05	NCA	NCA	NCA	1.60E3
	1990	18.7	NCA	1.75E01	2.36E01	2.36E01	2.12E01	NCA	1.55E01	184	12.8	12.0	NCA	6.53E05	9.80E05	NCA	NCA	1.6E3
	2000	18.7	NCA	1.75E01	2.36E01	2.36E01	2.12E01	NCA	1.55E01	184	12.8	12.0	NCA	6.53E05	9.80E05	NCA	NCA	1.6E3
750.0	1980	NCA	NCA	2.19E01	NCA	3.20E01	NCA	NCA	NCA	192	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.19E01	3.20E01	3.20E01	NCA	NCA	NCA	192	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.4E3
	1990	23.3	NCA	2.19E01	3.20E01	3.20E01	2.88E01	NCA	NCA	192	19.2	NCA	NCA	9.79E05	1.47E06	NCA	NCA	2.4E3
	2000	23.3	NCA	2.19E01	3.20E01	3.20E01	2.88E01	NCA	23.3	192	19.2	18.0	NCA	9.79E05	1.47E06	NCA	NCA	2.4E3
1000.0	1980	NCA	NCA	2.24E01	NCA	3.99E01	NCA	NCA	NCA	256	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	28.5	3.09E01	2.24E01	3.99E01	3.99E01	NCA	NCA	NCA	256	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	28.5	3.09E01	2.24E01	3.99E01	3.99E01	3.59E01	NCA	NCA	256	25.6	NCA	NCA	1.31E06	NCA	NCA	NCA	3.2E3
	2000	28.5	3.09E01	2.24E01	3.99E01	3.99E01	3.59E01	NCA	31.0	256	25.6	32.0	NCA	1.31E06	1.96E06	NCA	NCA	3.2E3
5000.0	1980	1.29E02	NCA	1.22E02	NCA	1.57E02	NCA	NCA	NCA	384	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.29E02	1.41E02	1.22E02	1.57E02	1.57E02	NCA	NCA	NCA	384	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.29E02	1.41E02	1.22E02	1.57E02	1.57E02	1.41E02	NCA	NCA	384	90.0	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.29E02	1.41E02	1.22E02	1.57E02	1.57E02	1.41E02	NCA	NCA	384	90.0	108.0	NCA	6.53E06	NCA	NCA	NCA	NCA

PARAMETER: WEIGHT UNITS: POUNDS

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES REGENERATIVE OPEN-CYCLE	GAS TURBINES CLOSED CYCLE	GAS TURBINES NON-REGENERATIVE OPEN-CYCLE	DIESELS TURBO-COMPOUNDED	DIESELS TURBO-CHARGED	DIESELS ADIABATIC	STIRLINGS FREE PISTON	STIRLINGS KINEMATIC	ORCS	FUEL CELLS PHOSPHORIC ACID	FUEL CELLS MOLTEN CARBONATE	FUEL CELLS SOLID POLYMER	PHOTOVOLTAICS FLAT PLATE	PHOTOVOLTAICS ACTIVELY COOLED	PHOTOCHEMICAL	WIND TURBINES VERTICAL AXIS	WIND TURBINES HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3300	NCA	NCA	NCA	8.46E03	2.45E04	NCA	9.53E03	9.53E03
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3300	2.5E02	NCA	NCA	7.88E03	2.38E04	NCA	8.79E03	8.79E03
	1990	NCA	NCA	NCA	NCA	NCA	NCA	1.08E02	2.15E02	3300	2.0E02	NCA	NCA	7.66E03	2.36E04	NCA	8.50E03	8.50E03
	2000	NCA	NCA	NCA	NCA	NCA	NCA	1.08E02	2.15E02	3300	2.0E02	NCA	2.0E02	7.58E03	2.35E04	7.58E03	8.40E03	8.40E03
5.0	1980	NCA	NCA	NCA	NCA	9.84E02	NCA	NCA	NCA	5720	NCA	NCA	NCA	2.82E04	8.16E04	NCA	2.95E04	2.95E04
	1985	NCA	NCA	NCA	NCA	9.84E02	NCA	NCA	NCA	5720	8.75E02	NCA	NCA	2.63E04	7.93E04	NCA	2.72E04	2.72E04
	1990	NCA	NCA	NCA	NCA	9.84E02	NCA	2.96E02	5.92E02	5720	7.0 E02	NCA	NCA	2.55E04	7.87E04	NCA	2.63E04	2.63E04
	2000	NCA	NCA	NCA	NCA	9.84E02	NCA	2.96E02	5.92E02	5720	7.0 E02	NCA	7.0E02	2.53E04	7.83E04	2.53E04	2.60E04	2.60E04
20.0	1980	NCA	NCA	NCA	NCA	2.03E03	NCA	NCA	NCA	4200	NCA	NCA	NCA	1.13E05	3.26E05	NCA	NCA	9.88E04
	1985	NCA	NCA	NCA	NCA	2.03E03	NCA	NCA	NCA	4200	3.5E03	NCA	NCA	1.05E05	3.17E05	NCA	9.11E04	9.11E04
	1990	NCA	NCA	NCA	NCA	2.03E03	NCA	NCA	1.49E03	4200	2.8E03	NCA	NCA	1.02E05	3.15E05	NCA	8.81E04	8.81E04
	2000	NCA	NCA	NCA	NCA	2.03E03	NCA	7.45E02	1.49E03	4200	2.8E03	NCA	2.8E03	1.01E05	3.13E05	1.01E05	8.71E04	8.71E04
30.0	1980	NCA	NCA	NCA	NCA	2.65E03	NCA	NCA	NCA	5400	NCA	NCA	NCA	1.68E05	4.89E05	NCA	NCA	1.42E05
	1985	NCA	NCA	NCA	NCA	2.65E03	NCA	NCA	NCA	5400	5.2E03	NCA	NCA	1.57E05	4.76E05	NCA	1.31E05	1.31E05
	1990	NCA	NCA	NCA	NCA	2.65E03	NCA	NCA	2.07E03	5400	4.2E03	NCA	NCA	1.53E05	4.73E05	NCA	1.27E05	1.27E05
	2000	NCA	NCA	NCA	NCA	2.65E03	NCA	NCA	2.07E03	5400	4.2E03	NCA	4.2E03	1.52E05	4.70E05	1.52E05	1.26E05	1.26E05
60.0	1980	NCA	NCA	NCA	NCA	4.10E03	NCA	NCA	NCA	12E03	NCA	NCA	NCA	3.37E05	NCA	NCA	NCA	2.68E05
	1985	NCA	NCA	NCA	NCA	4.10E03	NCA	NCA	NCA	12E03	1.0E04	NCA	NCA	3.14E05	9.52E05	NCA	NCA	2.47E05
	1990	NCA	NCA	NCA	NCA	4.10E03	NCA	NCA	3.59E03	12E03	8.0E03	NCA	NCA	3.06E05	9.46E05	NCA	2.39E05	2.39E05
	2000	NCA	NCA	173	NCA	4.10E03	NCA	NCA	3.59E03	12E03	8.0E03	NCA	NCA	3.04E05	9.40E05	NCA	2.36E05	2.36E05
100.0	1980	NCA	NCA	NCA	NCA	5.61E03	NCA	NCA	NCA	44E03	NCA	NCA	NCA	5.61E05	NCA	NCA	NCA	4.29E05
	1985	NCA	NCA	NCA	5.61E03	5.61E03	NCA	NCA	NCA	44E03	1.8E04	NCA	NCA	5.25E05	1.59E06	NCA	NCA	3.95E05
	1990	318	NCA	289	5.61E03	5.61E03	NCA	NCA	5.42E03	44E03	1.36E04	NCA	NCA	5.10E05	1.58E06	NCA	NCA	3.82E05
	2000	318	NCA	289	5.61E03	5.61E03	NCA	NCA	5.42E03	44E03	1.36E04	NCA	NCA	5.05E05	1.57E06	NCA	3.78E05	3.78E05
250.0	1980	NCA	NCA	NCA	NCA	9.74E03	NCA	NCA	NCA	44E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.01E06
	1985	NCA	NCA	NCA	9.74E03	9.74E03	NCA	NCA	NCA	44E03	NCA	NCA	NCA	1.31E06	3.98E06	NCA	NCA	9.31E05
	1990	795	NCA	723	9.74E03	9.74E03	8.78E03	NCA	1.14E04	44E03	3.4E04	3.4E04	NCA	1.28E06	3.95E06	NCA	NCA	9.00E05
	2000	795	NCA	723	9.74E03	9.74E03	8.78E03	NCA	1.14E04	44E03	3.4E04	3.4E04	NCA	1.26E06	3.93E06	NCA	NCA	8.90E05
500.0	1980	NCA	NCA	1.45E03	NCA	1.51E04	NCA	NCA	NCA	60.5E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	1.45E03	1.51E04	1.51E04	NCA	NCA	NCA	60.5E03	NCA	NCA	NCA	2.62E06	NCA	NCA	NCA	1.86E06
	1990	1600	NCA	1.45E03	1.51E04	1.51E04	1.36E04	NCA	2.03E04	60.5E03	7.2E04	7.2E04	NCA	2.54E06	7.90E06	NCA	NCA	1.80E06
	2000	1600	NCA	1.45E03	1.51E04	1.51E04	1.36E04	NCA	2.03E04	60.5E03	7.2E04	7.2E04	NCA	2.52E05	7.86E06	NCA	NCA	1.78E06
750.0	1980	NCA	NCA	2.17E03	NCA	2.01E04	NCA	NCA	NCA	77E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	2.17E03	2.01E04	2.01E04	NCA	NCA	NCA	77E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2.79E06
	1990	2390	NCA	2.17E03	2.01E04	2.01E04	1.81E04	NCA	NCA	77E03	1.2E05	NCA	NCA	3.84E06	1.18E07	NCA	NCA	2.70E06
	2000	2390	NCA	2.17E03	2.01E04	2.01E04	1.81E04	NCA	2.87E04	77E03	1.2E05	1.2E05	NCA	3.78E06	1.18E07	NCA	NCA	2.67E06
1000.0	1980	NCA	NCA	2.89E03	NCA	2.52E04	NCA	NCA	NCA	132E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3180	3.61E03	2.89E03	2.52E04	2.52E04	NCA	NCA	NCA	132E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3180	3.61E03	2.89E03	2.52E04	2.52E04	2.27E04	NCA	NCA	132E03	1.6E05	NCA	NCA	5.10E06	NCA	NCA	NCA	3.82E06
	2000	3180	3.61E03	2.89E03	2.52E04	2.52E04	2.27E04	NCA	3.69E04	132E03	1.6E05	1.6E05	NCA	5.05E06	1.57E07	NCA	NCA	3.78E06
5000.0	1980	1.60E04	NCA	1.45E04	NCA	1.38E05	NCA	NCA	NCA	500E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	1.60E04	1.81E04	1.45E04	1.38E05	1.38E05	NCA	NCA	NCA	500E03	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	1.60E04	1.81E04	1.45E04	1.38E05	1.38E05	1.24E05	NCA	NCA	500E03	8.0E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	1.60E04	1.81E04	1.45E04	1.38E05	1.38E05	1.24E05	NCA	NCA	500E03	8.0E05	8.0E05	NCA	2.52E07	NCA	NCA	NCA	NCA

PARAMETER: WEIGHT (ex. B.O.P.) UNITS: POUNDS

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3300	NCA	NCA	NCA	6.02E03	2.20E04	NCA	8.07E03	8.07E03
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3300	5.0E01	NCA	NCA	6.02E03	2.20E04	NCA	8.07E03	8.07E03
	1990	NCA	NCA	NCA	NCA	NCA	NCA	2.90E01	5.79E01	3300	4.0E01	NCA	NCA	6.02E03	2.20E04	NCA	8.07E03	8.07E03
	2000	NCA	NCA	NCA	NCA	NCA	NCA	2.90E01	5.79E01	3300	4.0E01	NCA	4.0E01	6.02E03	2.20E04	6.02E03	8.07E03	8.07E03
5.0	1980	NCA	NCA	NCA	NCA	3.85E02	NCA	NCA	NCA	5720	NCA	NCA	NCA	2.01E04	7.35E04	NCA	1.97E04	1.97E04
	1985	NCA	NCA	NCA	NCA	3.85E02	NCA	NCA	NCA	5720	1.75E02	NCA	NCA	2.01E04	7.35E04	NCA	1.97E04	1.97E04
	1990	NCA	NCA	NCA	NCA	3.85E02	NCA	9.65E01	1.93E02	5720	1.4E02	NCA	NCA	2.01E04	7.35E04	NCA	1.97E04	1.97E04
	2000	NCA	NCA	NCA	NCA	3.85E02	NCA	9.65E01	1.93E02	5720	1.4E02	NCA	1.4E02	2.01E04	7.35E04	2.01E04	1.97E04	1.97E04
20.0	1980	NCA	NCA	NCA	NCA	9.06E02	NCA	NCA	NCA	4200	NCA	NCA	NCA	8.03E04	2.94E05	NCA	NCA	5.98E04
	1985	NCA	NCA	NCA	NCA	9.06E02	NCA	NCA	NCA	4200	7.0E02	NCA	NCA	8.03E04	2.94E05	NCA	5.98E04	5.98E04
	1990	NCA	NCA	NCA	NCA	9.06E02	NCA	NCA	3.67E02	4200	5.60E02	NCA	NCA	8.03E04	2.94F05	NCA	5.98E04	5.98E04
	2000	NCA	NCA	NCA	NCA	9.06E02	NCA	1.84E02	3.67E02	4200	5.60E02	NCA	5.6E02	8.03E04	2.94E05	8.03E04	5.98E04	5.98E04
30.0	1980	NCA	NCA	NCA	NCA	1.13E03	NCA	NCA	NCA	5400	NCA	NCA	NCA	1.20E05	4.41E05	NCA	NCA	8.38E04
	1985	NCA	NCA	NCA	NCA	1.13E03	NCA	NCA	NCA	5400	1.04E03	NCA	NCA	1.20E05	4.41F05	NCA	8.38E04	8.38E04
	1990	NCA	NCA	NCA	NCA	1.13E03	NCA	NCA	5.51E02	5400	8.40E02	NCA	NCA	1.20E05	4.41E05	NCA	8.38E04	8.38E04
	2000	NCA	NCA	NCA	NCA	1.13E03	NCA	NCA	5.51E02	5400	8.40E02	NCA	8.4E02	1.20E05	4.41E05	1.20E05	8.38E04	8.38E04
60.0	1980	NCA	NCA	NCA	NCA	1.61E03	NCA	NCA	NCA	12000	NCA	NCA	NCA	2.41E05	NCA	NCA	NCA	1.51E05
	1985	NCA	NCA	NCA	NCA	1.61E03	NCA	NCA	NCA	12000	2.0E03	NCA	NCA	2.41E05	8.82E05	NCA	NCA	1.51E05
	1990	NCA	NCA	NCA	NCA	1.61E03	NCA	NCA	1.10E03	12000	1.60E03	NCA	NCA	2.41E05	8.82E05	NCA	1.51E05	1.51E05
	2000	NCA	NCA	67.9	NCA	1.61E03	NCA	NCA	1.10E03	12000	1.60E03	NCA	NCA	2.41E05	8.82E05	NCA	1.51E05	1.51E05
100.0	1980	NCA	NCA	NCA	NCA	2.03E03	NCA	NCA	NCA	44000	NCA	NCA	NCA	4.01E05	NCA	NCA	NCA	2.34E05
	1985	NCA	NCA	NCA	2.03E03	2.03E03	NCA	NCA	NCA	44000	3.4E03	NCA	NCA	4.01E05	1.47E06	NCA	NCA	2.34E05
	1990	115	NCA	105	2.03E03	2.03E03	NCA	NCA	1.84E03	44000	2.72E03	NCA	NCA	4.01E05	1.47E06	NCA	NCA	2.34E05
	2000	115	NCA	105	2.03E03	2.03E03	NCA	NCA	1.84E03	44000	2.72E03	NCA	NCA	4.01E05	1.47E06	NCA	2.34E05	2.34E05
250.0	1980	NCA	NCA	NCA	NCA	2.95E03	NCA	NCA	NCA	4400C	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5.19E05
	1985	NCA	NCA	NCA	2.95E03	2.95E03	NCA	NCA	NCA	44000	NCA	NCA	NCA	1.00E06	3.67E06	NCA	NCA	5.19E05
	1990	241	NCA	219	2.95E03	2.95E03	2.66E03	NCA	4.59E03	44000	6.8E03	6.8E03	NCA	1.00E06	3.67E06	NCA	NCA	5.19E05
	2000	241	NCA	219	2.95E03	2.95E03	2.66E03	NCA	4.59E03	44000	6.8E03	6.8E03	NCA	1.00E06	3.67E06	NCA	NCA	5.19E05
500.0	1980	NCA	NCA	3.88E02	NCA	4.04E03	NCA	NCA	NCA	60500	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3.88E02	4.04E03	4.04E03	NCA	NCA	NCA	60500	NCA	NCA	NCA	2.01E06	NCA	NCA	NCA	1.04E06
	1990	428	NCA	3.88E02	4.04E03	4.04E03	3.64E03	NCA	9.19E03	60500	1.44E04	1.44E04	NCA	2.01E06	7.35E06	NCA	NCA	1.04E06
	2000	428	NCA	3.88E02	4.04E03	4.04E03	3.64E03	NCA	9.19E03	60500	1.44E04	1.44E04	NCA	2.01E06	7.35E06	NCA	NCA	1.04E06
750.0	1980	NCA	NCA	5.66E02	NCA	5.24E03	NCA	NCA	NCA	77000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5.66E02	5.24E03	5.24E03	NCA	NCA	NCA	77000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1.50E06
	1990	623	NCA	5.66E02	5.24E03	5.24E03	4.72E03	NCA	NCA	77000	2.4E04	NCA	NCA	3.01E06	1.10E07	NCA	NCA	1.50E06
	2000	623	NCA	5.66E02	5.24E03	5.24E03	4.72E03	NCA	1.38E04	77000	2.4E04	2.4E04	NCA	3.01E06	1.10E07	NCA	NCA	1.50E06
1000.0	1980	NCA	NCA	7.70E02	NCA	6.71E03	NCA	NCA	NCA	132000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	847	9.61E02	7.70E02	6.71E03	6.71E03	NCA	NCA	NCA	132000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	847	9.61E02	7.70E02	6.71E03	6.71E03	6.04E03	NCA	NCA	132000	3.2E04	NCA	NCA	4.01E06	NCA	NCA	NCA	2.08E06
	2000	847	9.61E02	7.70E02	6.71E03	6.71E03	6.04E03	NCA	1.84E04	132000	3.2E04	3.2E04	NCA	4.01E06	1.47E07	NCA	NCA	2.08E06
5000.0	1980	7.32E03	NCA	6.63E03	6.31E04	6.31E04	NCA	NCA	NCA	500000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	7.32E03	8.29E03	6.63E03	6.31E04	6.31E04	NCA	NCA	NCA	500000	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	7.32E03	8.29E03	6.63E03	6.31E04	6.31E04	5.68E03	NCA	NCA	500000	1.6E05	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	7.32E03	8.29E03	6.63E03	6.31E04	6.31E04	5.68E03	NCA	NCA	500000	1.6E05	1.6E05	NCA	2.01E07	NCA	NCA	NCA	NCA

PARAMETER: RAW MATERIALS UNITS: ORDINAL, 1-5

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	5	5
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	NCA	NCA	5	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	NCA	NCA	5	5	5	5	NCA	5	5	5	5	5	5
5.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	5	5
	1985	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	5	NCA	5	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	5	NCA	5	5	5	5	NCA	5	5	5	5	5	5
20.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	5	NCA	5	5	5	5	NCA	5	5	5	5	5	5
30.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	5	NCA	NCA	5	5	5	NCA	5	5	5	5	5	5
60.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	NCA	5
	1990	NCA	NCA	NCA	NCA	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	5	NCA	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
100.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	5	5	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	NCA	5
	1990	5	NCA	5	5	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	NCA	5
	2000	5	NCA	5	5	5	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
250.0	1980	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1990	5	NCA	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
	2000	5	NCA	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
500.0	1980	NCA	NCA	5	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5	5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1990	5	NCA	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
	2000	5	NCA	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
750.0	1980	NCA	NCA	5	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5	5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5
	1990	5	NCA	5	5	5	3	NCA	5	5	5	NCA	NCA	5	5	NCA	NCA	5
	2000	5	NCA	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
1000.0	1980	NCA	NCA	5	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	5	5	5	5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	5	5	5	5	5	3	NCA	NCA	5	5	NCA	NCA	5	NCA	NCA	NCA	5
	2000	5	5	5	5	5	3	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
5000.0	1980	5	NCA		5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	5	5	5	5	5	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	5	5	5	5	5	3	NCA	NCA	5	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	5	5	5	5	5	3	NCA	NCA	5	5	5	NCA	5	NCA	NCA	NCA	NCA

PARAMETER: RELIABILITY UNITS: ORDINAL, 1-5

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	3	3	NCA	2	2
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	2	2
	1990	NCA	NCA	NCA	NCA	NCA	NCA	4	4	2	4	NCA	NCA	3	3	NCA	2	2
	2000	NCA	NCA	NCA	NCA	NCA	NCA	4	4	2	4	NCA	4	3	3	3	2	2
5.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	3	NCA	2	2
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	2	2
	1990	NCA	NCA	NCA	NCA	3	NCA	4	4	2	4	NCA	NCA	3	3	NCA	2	2
	2000	NCA	NCA	NCA	NCA	3	NCA	4	4	2	4	NCA	4	3	3	3	2	2
20.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	3	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	2	2
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	2	2
	2000	NCA	NCA	NCA	NCA	3	NCA	4	4	2	4	NCA	4	3	3	3	2	2
30.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	3	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	2	2
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	2	2
	2000	NCA	NCA	NCA	NCA	3	NCA	NCA	4	2	4	NCA	4	3	3	3	2	2
60.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	NCA	2
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	2	2
	2000	NCA	NCA	3	NCA	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	2	2
100.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	3	3	NCA	NCA	NCA	2	4	NCA	NCA	3	3	NCA	NCA	2
	1990	3	NCA	3	3	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	NCA	2
	2000	3	NCA	3	3	3	NCA	NCA	4	2	4	NCA	NCA	3	3	NCA	2	2
250.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	3	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	3	NCA	NCA	2
	1990	3	NCA	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
	2000	3	NCA	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
500.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3	3	3	NCA	NCA	NCA	2	NCA	NCA	NCA	3	NCA	NCA	NCA	2
	1990	3	NCA	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
	2000	3	NCA	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
750.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3	3	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2
	1990	3	NCA	3	3	3	3	NCA	NCA	2	4	NCA	NCA	3	3	NCA	NCA	2
	2000	3	NCA	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
1000.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	3	3	3	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	3	3	3	3	3	NCA	NCA	2	4	NCA	NCA	3	NCA	NCA	NCA	2
	2000	3	3	3	3	3	3	NCA	4	2	4	4	NCA	3	3	NCA	NCA	2
5000.0	1980	3	NCA	3	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	3	3	3	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	3	3	3	3	3	NCA	NCA	2	4	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	3	3	3	3	3	3	NCA	NCA	2	4	4	NCA	3	NCA	NCA	NCA	NCA

PARAMETER: **ENVIRONMENTAL CONSTRAINTS** UNITS: **ORDINAL, 1-5**

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	5	5
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	NCA	NCA	5	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	NCA	NCA	5	5	5	5	NCA	5	5	5	5	5	5
5.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	5	5
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	4	NCA	5	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	4	NCA	5	5	5	5	NCA	5	5	5	5	5	5
20.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	4	NCA	5	5	5	5	NCA	5	5	5	5	5	5
30.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	5	5
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	NCA	NCA	4	NCA	NCA	5	5	5	NCA	5	5	5	5	5	5
60.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	NCA	5
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
	2000	NCA	NCA	4	NCA	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
100.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	4	4	NCA	NCA	NCA	5	5	NCA	NCA	5	5	NCA	NCA	5
	1990	4	NCA	4	4	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	NCA	5
	2000	4	NCA	4	4	4	NCA	NCA	5	5	5	NCA	NCA	5	5	NCA	5	5
250.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5
	1985	NCA	NCA	NCA	4	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	5	NCA	NCA	5
	1990	4	NCA	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
	2000	4	NCA	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
500.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4	4	4	NCA	NCA	NCA	5	NCA	NCA	NCA	5	NCA	NCA	NCA	5
	1990	4	NCA	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
	2000	4	NCA	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
750.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4	4	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5
	1990	4	NCA	4	4	4	4	NCA	NCA	5	5	NCA	NCA	5	5	NCA	NCA	5
	2000	4	NCA	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
1000.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	4	4	4	4	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	4	4	4	4	4	4	NCA	NCA	5	5	NCA	NCA	5	NCA	NCA	NCA	5
	2000	4	4	4	4	4	4	NCA	5	5	5	5	NCA	5	5	NCA	NCA	5
5000.0	1980	4	NCA	4	NCA	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	4	4	4	4	4	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	4	4	4	4	4	4	NCA	NCA	5	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	4	4	4	4	4	4	NCA	NCA	5	5	5	NCA	5	NCA	NCA	NCA	NCA

PARAMETER: LOCATION CONSTRAINTS UNITS: ORDINAL, 1-5

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES: REGENERATIVE OPEN-CYCLE	GAS TURBINES: CLOSED CYCLE	GAS TURBINES: NON-REGENERATIVE OPEN-CYCLE	DIESELS: TURBO-COMPOUNDED	DIESELS: TURBO-CHARGED	DIESELS: ADIABATIC	STIRLINGS: FREE PISTON	STIRLINGS: KINEMATIC	ORCS	FUEL CELLS: PHOSPHORIC ACID	FUEL CELLS: MOLTEN CARBONATE	FUEL CELLS: SOLID POLYMER	PHOTOVOLTAICS: FLAT PLATE	PHOTOVOLTAICS: ACTIVELY COOLED	PHOTOVOLTAICS: PHOTOCHEMICAL	WIND TURBINES: VERTICAL AXIS	WIND TURBINES: HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	NCA	NCA	NCA	3	3	NCA	3	3
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	3	3
	1990	NCA	NCA	NCA	NCA	NCA	NCA	4	4	5	4	NCA	NCA	3	3	NCA	3	3
	2000	NCA	NCA	NCA	NCA	NCA	NCA	4	4	5	4	NCA	4	3	3	3	3	3
5.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	3	NCA	3	3
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	3	3
	1990	NCA	NCA	NCA	NCA	3	NCA	4	4	5	4	NCA	NCA	3	3	NCA	3	3
	2000	NCA	NCA	NCA	NCA	3	NCA	4	4	5	4	NCA	4	3	3	3	3	3
20.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	3	NCA	NCA	3
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	3	3
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	3	3
	2000	NCA	NCA	NCA	NCA	3	NCA	4	4	5	4	NCA	4	3	3	3	3	3
30.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	3	NCA	NCA	3
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	3	3
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	3	3
	2000	NCA	NCA	NCA	NCA	3	NCA	NCA	4	5	4	NCA	4	3	3	3	3	3
60.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	NCA	NCA	NCA	3
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	NCA	3
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	3	3
	2000	NCA	NCA	3	NCA	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	3	3
100.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	NCA	NCA	NCA	3
	1985	NCA	NCA	NCA	3	3	NCA	NCA	NCA	5	4	NCA	NCA	3	3	NCA	NCA	3
	1990	3	NCA	3	3	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	NCA	3
	2000	3	NCA	3	3	3	NCA	NCA	4	5	4	NCA	NCA	3	3	NCA	3	3
250.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3
	1985	NCA	NCA	NCA	3	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	3	NCA	NCA	3
	1990	3	NCA	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
	2000	3	NCA	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
500.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3	3	3	NCA	NCA	NCA	5	NCA	NCA	NCA	3	NCA	NCA	NCA	3
	1990	3	NCA	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
	2000	3	NCA	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
750.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	3	3	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	3
	1990	3	NCA	3	3	3	3	NCA	NCA	5	4	NCA	NCA	3	3	NCA	NCA	3
	2000	3	NCA	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
1000.0	1980	NCA	NCA	3	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	3	3	3	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	3	3	3	3	3	NCA	NCA	5	4	NCA	NCA	3	NCA	NCA	NCA	3
	2000	3	3	3	3	3	3	NCA	4	5	4	4	NCA	3	3	NCA	NCA	3
5000.0	1980	3	NCA	3	NCA	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	3	3	3	3	NCA	NCA	NCA	5	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	3	3	3	3	3	NCA	NCA	5	4	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	3	3	3	3	3	3	NCA	NCA	5	4	4	NCA	3	NCA	NCA	NCA	NCA

PARAMETER: OPERATIONAL CONSTRAINTS UNITS: ORDINAL: 1-5

		GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
POWER OUTPUT LEVEL, KW	YEAR	REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	2	2	NCA	2	2
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	2	2
	1990	NCA	NCA	NCA	NCA	NCA	NCA	5	5	2	3	NCA	NCA	2	2	NCA	2	2
	2000	NCA	NCA	NCA	NCA	NCA	NCA	5	5	2	3	NCA	3	2	2	2	2	2
5.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	2	NCA	2	2
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	2	2
	1990	NCA	NCA	NCA	NCA	4	NCA	5	5	2	3	NCA	NCA	2	2	NCA	2	2
	2000	NCA	NCA	NCA	NCA	4	NCA	5	5	2	3	NCA	3	2	2	2	2	2
20.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	2	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	2	2
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	2	2
	2000	NCA	NCA	NCA	NCA	4	NCA	5	5	2	3	NCA	3	2	2	2	2	2
30.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	2	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	2	2
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	2	2
	2000	NCA	NCA	NCA	NCA	4	NCA	NCA	5	2	3	NCA	3	2	2	2	2	2
60.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	NCA	2
	1990	NCA	NCA	NCA	NCA	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	2	2
	2000	NCA	NCA	4	NCA	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	2	2
100.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	4	4	NCA	NCA	NCA	2	3	NCA	NCA	2	2	NCA	NCA	2
	1990	4	NCA	4	4	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	NCA	2
	2000	4	NCA	4	4	4	NCA	NCA	5	2	3	NCA	NCA	2	2	NCA	2	2
250.0	1980	NCA	NCA	NCA	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2
	1985	NCA	NCA	NCA	4	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	2	NCA	NCA	2
	1990	4	NCA	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
	2000	4	NCA	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
500.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4	4	4	NCA	NCA	NCA	2	NCA	NCA	NCA	2	NCA	NCA	NCA	2
	1990	4	NCA	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
	2000	4	NCA	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
750.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	4	4	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2
	1990	4	NCA	4	4	4	4	NCA	NCA	2	3	NCA	NCA	2	2	NCA	NCA	2
	2000	4	NCA	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
1000.0	1980	NCA	NCA	4	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	4	4	4	4	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	4	4	4	4	4	4	NCA	NCA	2	3	NCA	NCA	2	NCA	NCA	NCA	2
	2000	4	4	4	4	4	4	NCA	5	2	3	3	NCA	2	2	NCA	NCA	2
5000.0	1980	4	NCA	4	NCA	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	4	4	4	4	4	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	4	4	4	4	4	4	NCA	NCA	2	3	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	4	4	4	4	4	4	NCA	NCA	2	3	3	NCA	2	NCA	NCA	NCA	NCA

PARAMETER: THERMAL ENERGY AVAILABLE UNITS: ORDINAL, 1-5

POWER OUTPUT LEVEL, KW	YEAR	GAS TURBINES			DIESELS			STIRLINGS		ORCS	FUEL CELLS			PHOTOVOLTAICS			WIND TURBINES	
		REGENERATIVE OPEN-CYCLE	CLOSED CYCLE	NON-REGENERATIVE OPEN-CYCLE	TURBO-COMPOUNDED	TURBO-CHARGED	ADIABATIC	FREE PISTON	KINEMATIC		PHOSPHORIC ACID	MOLTEN CARBONATE	SOLID POLYMER	FLAT PLATE	ACTIVELY COOLED	PHOTOCHEMICAL	VERTICAL AXIS	HORIZONTAL AXIS
1.5	1980	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	NCA	NCA	NCA	1	3	NCA	1	1
	1985	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	1	1
	1990	NCA	NCA	NCA	NCA	NCA	NCA	2	2	2	3	NCA	NCA	1	3	NCA	1	1
	2000	NCA	NCA	NCA	NCA	NCA	NCA	2	2	2	3	NCA	1	1	3	1	1	1
5.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	3	NCA	1	1
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	1	1
	1990	NCA	NCA	NCA	NCA	3	NCA	2	2	2	3	NCA	NCA	1	3	NCA	1	1
	2000	NCA	NCA	NCA	NCA	3	NCA	2	2	2	3	NCA	1	1	3	1	1	1
20.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	3	NCA	NCA	1
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	1	1
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	1	1
	2000	NCA	NCA	NCA	NCA	3	NCA	2	2	2	3	NCA	1	1	3	1	1	1
30.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	3	NCA	NCA	1
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	1	1
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	1	1
	2000	NCA	NCA	NCA	NCA	3	NCA	NCA	2	2	3	NCA	1	1	3	1	1	1
60.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	NCA	NCA	NCA	1
	1985	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	NCA	1
	1990	NCA	NCA	NCA	NCA	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	1	1
	2000	NCA	NCA	5	NCA	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	1	1
100.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	NCA	NCA	NCA	1
	1985	NCA	NCA	NCA	2	3	NCA	NCA	NCA	2	3	NCA	NCA	1	3	NCA	NCA	1
	1990	3	NCA	5	2	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	NCA	1
	2000	3	NCA	5	2	3	NCA	NCA	2	2	3	NCA	NCA	1	3	NCA	1	1
250.0	1980	NCA	NCA	NCA	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1
	1985	NCA	NCA	NCA	2	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	3	NCA	NCA	1
	1990	3	NCA	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCA	1
	2000	3	NCA	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCQ	1
500.0	1980	NCA	NCA	5	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5	2	3	NCA	NCA	NCA	2	NCA	NCA	NCA	1	NCA	NCA	NCA	1
	1990	3	NCA	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCA	1
	2000	3	NCA	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCA	1
750.0	1980	NCA	NCA	5	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	NCA	NCA	5	2	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	1
	1990	3	NCA	5	2	3	4	NCA	NCA	2	3	NCA	NCA	1	3	NCA	NCA	1
	2000	3	NCA	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCA	1
1000.0	1980	NCA	NCA	5	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	2	5	2	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	2	5	2	3	4	NCA	NCA	2	3	NCA	NCA	1	NCA	NCA	NCA	1
	2000	3	2	5	2	3	4	NCA	2	2	3	5	NCA	1	3	NCA	NCA	1
5000.0	1980	3	NCA	5	NCA	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1985	3	2	5	2	3	NCA	NCA	NCA	2	NCA	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	1990	3	2	5	2	3	4	NCA	NCA	2	3	NCA	NCA	NCA	NCA	NCA	NCA	NCA
	2000	3	2	5	2	3	4	NCA	NCA	2	3	5	NCA	1	NCA	NCA	NCA	NCA

BATTERY PARAMETERS

Because the batteries are modular, the parameter values are presented on a per kilowatt-hour basis where appropriate. The batteries supply dc power as output. A complete charge/discharge cycle is assumed to occur twice per day with a total discharge time of 16 hours. The batteries operate 365 days per year.

Certain parameters for the energy converson technologies are not directly applicable to the battery technologies:

- Annual fuel consumption becomes electricity required for charging.
- Annual fuel cost becomes annual cost of electricity for charging.

The following parameters were excluded from the battery paramenter survey because their values were the same for all of the batteries and therefore do no affect the decision as to the best technology for any given application.

- Charge time
- Discharge time
- Fuel capability
- Operational constraints.

PARAMETER: TYPE UNITS: Mobile$^{(M)}$/Transportable$^{(T)}$/ Fixed$^{(F)}$
(at 1 kWhr capacity)

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	M	NCA
1985	NCA	NCA	M	M	NCA	M	NCA
1990	M	M	M	M	M	M	M
2000	M	M	M	M	M	M	M

PARAMETER: System Acquisition Cost

UNITS: 1980 Dollars/ kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.83E02	NCA
1985	NCA	NCA	1.35E02	9.76E01	NCA	1.24E02	NCA
1990	9.60E01	6.56E01	1.35E02	9.76E01	8.66E01	1.18E02	7.58E01
2000	8.66E01	6.24E01	1.29E02	9.26E01	8.26E01	1.18E02	7.20E01

PARAMETER: Acquisition Cost (ex. B.O.P.)

UNITS: 1980 Dollars/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.23E02	NCA
1985	NCA	NCA	9.0E01	6.48E01	NCA	8.26E01	NCA
1990	6.42E01	4.38E01	9.00E01	6.48E01	5.80E01	7.84E01	5.06E01
2000	5.76E01	4.16E01	8.58E01	6.16E01	5.50E01	7.84E01	4.80E01

PARAMETER: Annual Operations and Maintenance Cost

UNITS: 1980 Dollars/Year per kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	3.66	NCA
1985	NCA	NCA	2.70	1.95	NCA	2.48	NCA
1990	1.92	1.31	2.70	1.95	1.73	2.36	1.52
2000	1.73	1.25	2.58	1.85	1.65	2.36	1.44

PARAMETER: EFFICIENCY UNITS: PER CENT

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	79.0	NCA
1985	NCA	NCA	65.0	75.0	NCA	82.0	NCA
1990	79.4	71.8	65.0	75.0	82.5	82.0	75.0
2000	83.4	75.4	68.3	82.0	84.0	83.0	78.8

PARAMETER: LIFETIME UNITS: YEARS

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	6.85E-01	NCA
1985	NCA	NCA	2.40	1.37	NCA	1.23	NCA
1990	3.08	3.00	2.74	2.74	2.30	1.29	20.0
2000	3.08	3.00	2.80	4.11	3.59	1.36	20.0

PARAMETER: Annual Electricity Required for Charging

UNITS: kWhr

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.03E03	NCA
1985	NCA	NCA	1.25E03	1.08E03	NCA	9.89E02	NCA
1990	1.02E+03	1.13E03	1.25E03	1.08E03	9.83E02	9.89E02	1.08E03
2000	9.73E+02	1.08E03	1.19E03	9.89E02	9.66E02	9.77E02	1.03E03

PARAMETER: Annual Cost of Electricity Required for Charging (Constant)

UNITS: 1980 Dollars

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acide	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.62E01	NCA
1985	NCA	NCA	3.48E01	3.02E01	NCA	2.76E01	NCA
1990	2.85E01	3.15E01	3.48E01	3.02E01	2.74E01	2.76E01	3.02E01
2000	2.71E01	3.00E01	3.31E01	2.76E01	2.69E01	2.73E01	2.87E+01

PARAMETER: Annual Cost of Electricity Required for Charging (5%)

UNITS: 1980 Dollars

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	2.86E01	NCA
1985	NCA	NCA	4.44E01	3.85E01	NCA	3.52E01	NCA
1990	4.65E01	5.14E01	5.68E01	4.92E01	4.47E01	4.50E01	4.92E01
2000	7.21E01	7.97E01	8.80E01	7.33E01	7.16E01	7.24E01	7.63E01

PARAMETER: Annual Cost of Electricity Required for Charging (10%)

UNITS: 1980 Dollars

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	3.42E01	NCA
1985	NCA	NCA	5.60E01	4.86E01	NCA	4.44E01	NCA
1990	7.40E01	8.18E01	9.03E01	7.83E01	7.12E01	7.16E01	7.83E01
2000	1.83E02	2.20E02	2.23E02	1.86E02	1.82E02	1.84E02	1.94E02

PARAMETER: Life-Cycle Cost

UNITS: 1980 $ per kWhr

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acide	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.80E-01	NCA
1985	NCA	NCA	6.39E-02	6.70E-02	NCA	8.48E-02	NCA
1990	4.25E-02	3.64E-02	5.98E-02	4.62E-02	4.49E-02	7.89E-02	2.59E-02
2000	3.92E-02	3.46E-02	5.65E-02	3.66E-02	3.57E-02	7.59E-02	2.46E-02

PARAMETER: Life-Cycle Cost (5%)

UNITS: 1980 Dollars per kWhr

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1.95E-01	NCA
1985	NCA	NCA	8.23E-02	8.29E-02	NCA	9.94E-02	NCA
1990	6.64E-02	6.28E-02	8.90E-02	7.15E-02	6.79E-02	1.02E-01	5.11E-02
2000	8.61E-02	8.66E-02	1.14E-01	8.44E-02	8.24E-02	1.23E-01	7.43E-02

PARAMETER: Life-Cycle Cost (10%)

UNITS: 1980 Dollars per kWhr

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	2.17E-01	NCA
1985	NCA	NCA	1.20E-01	1.16E-01	NCA	1.30E-01	NCA
1990	1.27E-01	1.30E-01	1.63E-01	1.36E-01	1.26E-01	1.61E-01	1.16E-01
2000	2.74E-01	2.94E-01	3.43E-01	2.75E-01	2.69E-01	3.12E-01	2.73E-01

PARAMETER: Volume

UNITS: Cubic feet/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	9.10	NCA
1985	NCA	NCA	4.88	2.13	NCA	9.10	NCA
1990	4.55	2.44	4.88	2.13	5.26	9.10	6.67
2000	4.55	2.44	4.88	2.13	5.26	9.10	6.67

PARAMETER: Volume (ex. B.O.P.)

UNITS: Cubic feet/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	7.14E-01	NCA
1985	NCA	NCA	3.83E-01	1.79E-01	NCA	7.14E-01	NCA
1990	1.30	1.19	3.83E-01	1.79E-01	1.44E-01	7.14E-01	2.0CE-02
2000	1.30	1.19	3.83E-01	1.79E-01	1.44E-01	7.14E-01	2.00E-02

PARAMETER: Area

UNITS: Square feet/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	7.0E-01	NCA
1985	NCA	NCA	8.14E-01	3.79E-01	NCA	7.0E-01	NCA
1990	3.50E-01	2.50E-01	8.14E-01	3.79E-01	5.21E-01	7.0E-01	5.06E-01
2000	3.50E-01	2.50E-01	8.14E-01	3.79E-01	5.21E-01	7.0E-01	5.06E-01

PARAMETER: Area (ex. B.O.P.)

UNITS: Square feet/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	2.46E-01	NCA
1985	NCA	NCA	4.01E-01	1.92E-01	NCA	2.46E-01	NCA
1990	1.33E-01	1.33E-01	4.01E-01	1.92E-01	1.10E-01	2.46E-01	7.37E-02
2000	1.33E-01	1.33E-01	4.01E-01	1.92E-01	1.10E-01	2.46E-01	7.37E-02

PARAMETER: Weight

UNITS: Pounds/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	9.80E01	NCA
1985	NCA	NCA	5.62E01	2.60E01	NCA	7.36E01	NCA
1990	2.61E01	4.05E01	5.32E01	2.54E01	3.44E01	6.76E01	3.60E01
2000	2.44E01	4.05E01	4.89E01	2.36Eo1	2.83E01	6.28E01	3.60E01

PARAMETER: Weight (ex. B.O.P.)

UNITS: Pounds/kWhr capacity

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	8.16E01	NCA
1985	NCA	NCA	4.68E01	2.18E01	NCA	6.12E01	NCA
1990	2.18E01	3.38E01	4.44E01	2.12E01	2.86E01	5.64E01	3.00E01
2000	2.04E01	3.38E01	4.08E01	1.97E01	2.36E01	5.24E01	3.00E01

PARAMETER: RAW MATERIALS UNITS: Ordinal; 1-5

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	5	NCA
1985	NCA	NCA	4	4	NCA	5	NCA
1990	3	3	4	4	4	5	2
2000	3	3	4	4	4	5	2

PARAMETER: Reliability

UNITS: Ordinal; 1-5

Year of Value	BATTERIES						
	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li-Al/FeS_2$	Na/S	Lead Acids	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	4	NCA
1985	NCA	NCA	4	3	NCA	4	NCA
1990	4	4	4	3	3	4	4
2000	4	4	4	3	3	4	4

PARAMETER: ENVIRONMENTAL CONSTRAINTS UNITS: Ordinal;1-5

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	5	NCA
1985	NCA	NCA	5	5	NCA	5	NCA
1990	4	4	5	5	5	5	5
2000	4	4	5	5	5	5	5

PARAMETER: THERMAL ENERGY AVAILABLE UNITS: Ordinal; 1-5

YEAR	Zn/Cl_2	Zn/Br_2	Ni/Fe	$Li\text{-}Al/FeS_2$	Na/S	Lead Acid	Redox Cr-Fe
1980	NCA	NCA	NCA	NCA	NCA	1	NCA
1985	NCA	NCA	1	3	NCA	1	NCA
1990	1	1	1	3	3	1	1
2000	1	1	1	3	3	1	1

THERMAL ENERGY STORAGE PARAMETERS

This section presents the parameter values for thermal energy storage (TES) technologies. TES devices were assumed to be applicable for space-heating with a continuous diurnal cycle with 365 days per year operation.

The TES parameters are for the total system. Therefore this section does not include any of the "ex. BOP" parameters that were included for the batteries and the energy conversion technologies. Certain parameters for the energy conversion technologies are not directly applicable to the TES technologies:

- Annual fuel consumption becomes annual energy required for charging.
- Annual fuel cost becomes annual cost of energy required for charging.
- Start-up time becomes charge time.
- Shutdown time becomes discharge time.
- Fuel capability becomes charging energy requirements.

The following parameters were excluded from the TES parameter survey becasue their values were the same for all of the TES technologies and therefore do not affect the decision as to the best technology for any given application:

- Locational constraints
- Environmental constraints
- Thermal energy available
- Lifetime.

PARAMETER: TYPE UNITS: Mobile$^{(M)}$/Transportable$^{(T)}$/Fixed$^{(F)}$

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	M	M	NCA	M	M	NCA
	1985	M	M	M	M	M	NCA
	1990	M	M	M	M	M	M
	2000	M	M	M	M	M	M
100	1980	M	M	NCA	M	M	NCA
	1985	M	M	M	M	M	NCA
	1990	M	M	M	M	M	M
	2000	M	M	M	M	M	M
250	1980	M	M	NCA	M	M	NCA
	1985	M	M	M	M	M	NCA
	1990	M	M	M	M	M	M
	2000	M	M	M	M	M	M
500	1980	M	M	NCA	F	F	NCA
	1985	M	M	M	F	F	NCA
	1990	M	M	M	F	F	M
	2000	M	M	M	F	F	M
1000	1980	M	M	NCA	F	F	NCA
	1985	M	M	M	F	F	NCA
	1990	M	M	M	F	F	M
	2000	M	M	M	F	F	M
5000	1980	M	M	NCA	F	F	NCA
	1985	M	M	M	F	F	NCA
	1990	M	M	M	F	F	M
	2000	M	M	M	F	F	M
12500	1980	M	M	NCA	F	F	NCA
	1985	M	M	M	F	F	NCA
	1990	M	M	M	F	F	M
	2000	M	M	M	F	F	M
25,000	1980	M	M	NCA	F	F	NCA
	1985	M	M	M	F	F	NCA
	1990	M	M	M	F	F	M
	2000	M	M	M	F	F	M
37,500	1980	F	M	NCA	F	F	NCA
	1985	F	M	M	F	F	NCA
	1990	F	M	M	F	F	M
	2000	F	M	M	F	F	M
50,000	1980	F	M	NCA	F	F	NCA
	1985	F	M	M	F	F	NCA
	1990	F	M	M	F	F	F
	2000	F	M	M	F	F	F
250,000	1980	F	F	NCA	F	F	NCA
	1985	F	F	F	F	F	NCA
	1990	F	F	F	F	F	F
	2000	F	F	F	F	F	F

PARAMETER: CHARGING ENERGY CAPABILITY UNITS: Thermal (T) /Electric (E)

Thermal Energy Capacity, 10^3Btu	Year	$CaCl\cdot 6\ H_2O$	$Na_2SO_4\cdot 10\ H_2O$	$NaS_2O_3\cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
100	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
250	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
500	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
1000	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
5000	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
12500	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
25,000	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
37,500	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
50,000	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T
250,000	1980	T	T	NCA	E	E	NCA
	1985	T	T	T	E	E	NCA
	1990	T	T	T	E	E	T
	2000	T	T	T	E	E	T

PARAMETER: SYSTEM ACQUISITION COST UNITS: 1980 Dollars

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	503	776	NCA	255	502	NCA
	1985	453	698	491	255	313	NCA
	1990	453	698	491	255	313	812
	2000	453	698	491	255	313	812
100	1980	867	1360	NCA	485	892	NCA
	1985	780	1220	842	485	558	NCA
	1990	780	1220	842	485	558	1400
	2000	780	1220	842	485	558	1400
250	1980	1740	2790	NCA	1130	1880	NCA
	1985	1570	2510	1680	1130	1180	NCA
	1990	1570	2510	1680	1130	1180	2780
	2000	1570	2510	1680	1130	1180	2780
500	1980	2870	4730	NCA	2140	3270	NCA
	1985	2580	4260	2750	2140	2040	NCA
	1990	2580	4260	2750	2140	2040	4460
	2000	2580	4260	2750	2140	2040	4460
1000	1980	4590	7830	NCA	4040	5600	NCA
	1985	4130	7050	4330	4040	3500	NCA
	1990	4130	7050	4330	4040	3500	6710
	2000	4130	7050	4330	4040	3500	6710
5000	1980	10600	21900	NCA	17400	18000	NCA
	1985	9540	19700	9300	17400	11300	NCA
	1990	9540	19700	9300	17400	11300	7950
	2000	9540	19700	9300	17400	11300	7950
12500	1980	26500	32000	NCA	43500	45000	NCA
	1985	23900	28800	23300	43500	28100	NCA
	1990	23900	28800	23300	43500	28100	19900
	2000	23900	28800	23300	43500	28100	19900
25,000	1980	53000	64000	NCA	87000	90000	NCA
	1985	47700	57600	46500	87000	56300	NCA
	1990	47700	57600	46500	87000	56300	39800
	2000	47700	57600	46500	87000	56300	39800
37,500	1980	79500	96000	NCA	131000	135000	NCA
	1985	71600	86400	69800	131000	84400	NCA
	1990	71600	86400	69800	131000	84400	59600
	2000	71600	86400	69800	131000	84400	59600
50,000	1980	106000	128000	NCA	174000	180000	NCA
	1985	95400	115000	93000	174000	113000	NCA
	1990	95400	115000	93000	174000	113000	79500
	2000	95400	115000	93000	174000	113000	79500
250,000	1980	530000	640000	NCA	870000	900000	NCA
	1985	477000	576000	465000	870000	563000	NCA
	1990	477000	576000	465000	870000	563000	398000
	2000	477000	576000	465000	870000	563000	398000

PARAMETER: ANNUAL O & M COSTS UNITS: 1980 Dollars

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	2.63	41.10	NCA	7.88	15.50	NCA
	1985	2.37	37.00	63.80	7.88	9.69	NCA
	1990	2.37	37.00	63.80	7.88	9.69	24.40
	2000	2.37	37.00	63.80	7.88	9.69	24.40
100	1980	4.98	72.10	NCA	13.10	24.20	NCA
	1985	4.48	64.90	109.00	13.10	15.10	NCA
	1990	4.48	64.90	109.00	13.10	15.10	42.00
	2000	4.48	64.90	109.00	13.10	15.15	42.00
250	1980	11.60	148.00	NCA	24.90	41.40	NCA
	1985	10.40	133.00	218.00	24.90	25.90	NCA
	1990	10.40	133.00	218.00	24.90	25.90	83.40
	2000	10.40	133.00	218.00	24.90	25.90	83.40
500	1980	21.70	251.00	NCA	38.90	59.50	NCA
	1985	19.50	226.00	358.00	38.90	37.20	NCA
	1990	19.50	226.00	358.00	38.90	37.20	134.00
	2000	19.50	226.00	358.00	38.90	37.20	134.00
1000	1980	40.60	415.00	NCA	58.20	80.60	NCA
	1985	36.50	374.00	563.00	58.20	50.40	NCA
	1990	36.50	374.00	563.00	58.20	50.40	201.00
	2000	36.50	374.00	563.00	58.20	50.40	201.00
5000	1980	171.00	1160.00	NCA	97.40	101.00	NCA
	1985	154.00	1040.00	1210.00	97.40	63.10	NCA
	1990	154.00	1040.00	1210.00	97.40	63.10	239.00
	2000	154.00	1040.00	1210.00	97.40	63.10	239.00
12500	1980	380.00	1700.00	NCA	244.00	252.00	NCA
	1985	342.00	1530.00	3030.00	244.00	158.00	NCA
	1990	342.00	1530.00	3030.00	244.00	158.00	597.00
	2000	342.00	1530.00	3030.00	244.00	158.00	597.00
25,000	1980	691	3390	NCA	487	504	NCA
	1985	622	3050	6050	487	315	NCA
	1990	622	3050	6050	487	315	1190
	2000	622	3050	6050	487	315	1190
37,500	1980	976	5090	NCA	734	756	NCA
	1985	878	4580	9070	734	473	NCA
	1990	878	4580	9070	734	473	1790
	2000	878	4580	9070	734	473	1790
50,000	1980	1240	6780	NCA	974	1010	NCA
	1985	1120	6100	12100	974	631	NCA
	1990	1120	6100	12100	974	631	2390
	2000	1120	6100	12100	974	631	2390
250,000	1980	4610	33900	NCA	4870	5040	NCA
	1985	4150	30500	60500	4870	3150	NCA
	1990	4150	30500	60500	4870	3150	11900
	2000	4150	30500	60500	4870	3150	11900

PARAMETER: SYSTEM EFFICIENCY   UNITS: Percent

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
100	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
250	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
500	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
1000	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
5000	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
12500	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
25,000	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
37,500	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
50,000	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95
250,000	1980	95	95	NCA	95	95	NCA
	1985	95	95	95	95	95	NCA
	1990	95	95	95	95	95	95
	2000	95	95	95	95	95	95

PARAMETER: ANNUAL ENERGY REQUIRED FOR CHARGING UNITS: Btu

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2\ SO_4\ \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	1.92E07	1.92E07	NCA	1.92E07	1.92E07	NCA
	1985	1.92E07	1.92E07	1.92E07	1.92E07	1.92E07	NCA
	1990	1.92E07	1.92E07	1.92E07	1.92E07	1.92E07	1.92E07
	2000	1.92E07	1.92E07	1.92E07	1.92E07	1.92E07	1.92E07
100	1980	3.84E07	3.84E07	NCA	3.84E07	3.84E07	NCA
	1985	3.84E07	3.84E07	3.84E07	3.84E07	3.84E07	NCA
	1990	3.84E07	3.84E07	3.84E07	3.84E07	3.84E07	3.84E07
	2000	3.84E07	3.84E07	3.84E07	3.84E07	3.84E07	3.84E07
250	1980	9.61E07	9.61E07	NCA	9.61E07	9.61E07	NCA
	1985	9.61E07	9.61E07	9.61E07	9.61E07	9.61E07	NCA
	1990	9.61E07	9.61E07	9.61E07	9.61E07	9.61E07	9.61E07
	2000	9.61E07	9.61E07	9.61E07	9.61E07	9.61E07	9.61E07
500	1980	1.92E08	1.92E08	NCA	1.92E08	1.92E08	NCA
	1985	1.92E08	1.92E08	1.92E08	1.92E08	1.92E08	NCA
	1990	1.92E08	1.92E08	1.92E08	1.92E08	1.92E08	1.92E08
	2000	1.92E08	1.92E08	1.92E08	1.92E08	1.92E08	1.92E08
1000	1980	3.84E08	3.84E08	NCA	3.84E08	3.84E08	NCA
	1985	3.84E08	3.84E08	3.84E08	3.84E08	3.84E08	NCA
	1990	3.84E08	3.84E08	3.84E08	3.84E08	3.84E08	3.84E08
	2000	3.84E08	3.84E08	3.84E08	3.84E08	3.84E08	3.84E08
5000	1980	1.92E09	1.92E09	NCA	1.92E09	1.92E09	NCA
	1985	1.92E09	1.92E09	1.92E09	1.92E09	1.92E09	NCA
	1990	1.92E09	1.92E09	1.92E09	1.92E09	1.92E09	1.92E09
	2000	1.92E08	1.92E09	1.92E09	1.92E09	1.92E09	1.92E09
12500	1980	4.80E09	4.80E09	NCA	4.80E09	4.80E09	NCA
	1985	4.80E09	4.80E09	4.80E09	4.80E09	4.80E09	NCA
	1990	4.80E09	4.80E09	4.80E09	4.80E09	4.80E09	4.80E09
	2000	4.80E09	4.80E09	4.80E09	4.80E09	4.80E09	4.80E09
25,000	1980	9.61E09	9.61E09	NCA	9.61E09	9.61E09	NCA
	1985	9.61E09	9.61E09	9.61E09	9.61E09	9.61E09	NCA
	1990	9.61E09	9.61E09	9.61E09	9.61E09	9.61E09	9.61E09
	2000	9.61E09	9.61E09	9.61E09	9.61E09	9.61E09	9.61E09
37,500	1980	1.44E10	1.44E10	NCA	1.44E10	1.44E10	NCA
	1985	1.44E10	1.44E10	1.44E10	1.44E10	1.44E10	NCA
	1990	1.44E10	1.44E10	1.44E10	1.44E10	1.44E10	1.44E10
	2000	1.44E10	1.44E10	1.44E10	1.44E10	1.44E10	1.44E10
50,000	1980	1.92E10	1.92E10	NCA	1.92E10	1.92E10	NCA
	1985	1.92E10	1.92E10	1.92E10	1.92E10	1.92E10	NCA
	1990	1.92E10	1.92E10	1.92E10	1.92E10	1.92E10	1.92E10
	2000	1.92E10	1.92E10	1.92E10	1.92E10	1.92E10	1.92E10
250,000	1980	9.61E10	9.61E10	NCA	9.61E10	9.61E10	NCA
	1985	9.61E10	9.61E10	9.61E10	9.61E10	9.61E10	NCA
	1990	9.61E10	9.61E10	9.61E10	9.61E10	9.61E10	9.61E10
	2000	9.61E10	9.61E10	9.61E10	9.61E10	9.61E10	9.61E10

PARAMETER: ANNUAL COST OF ENERGY REQUIRED FOR CHARGING UNITS: 1980 Dollars

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	0	0	NCA	89	89	NCA
	1985	0	0	0	157	157	NCA
	1990	0	0	0	157	157	0
	2000	0	0	0	157	157	0
100	1980	0	0	NCA	178	178	NCA
	1985	0	0	0	314	314	NCA
	1990	0	0	0	314	314	0
	2000	0	0	0	314	314	0
250	1980	0	0	NCA	446	446	NCA
	1985	0	0	0	786	786	NCA
	1990	0	0	0	786	786	0
	2000	0	0	0	786	786	0
500	1980	0	0	NCA	891	891	NCA
	1985	0	0	0	1570	1570	NCA
	1990	0	0	0	1570	1570	0
	2000	0	0	0	1570	1570	0
1000	1980	0	0	NCA	1780	1780	NCA
	1985	0	0	0	3140	3140	NCA
	1990	0	0	0	3140	3140	0
	2000	0	0	0	3140	3140	0
5000	1980	0	0	NCA	8910	8910	NCA
	1985	0	0	0	15700	15700	NCA
	1990	0	0	0	15700	15700	0
	2000	0	0	0	15700	15700	0
12500	1980	0	0	NCA	22300	22300	NCA
	1985	0	0	0	39300	39300	NCA
	1990	0	0	0	39300	39300	0
	2000	0	0	0	39300	39300	0
25,000	1980	0	0	NCA	44600	44600	NCA
	1985	0	0	0	78600	78600	NCA
	1990	0	0	0	78600	78600	0
	2000	0	0	0	78600	78600	0
37,500	1980	0	0	NCA	66800	66800	NCA
	1985	0	0	0	118000	118000	NCA
	1990	0	0	0	118000	118000	0
	2000	0	0	0	118000	118000	0
50,000	1980	0	0	NCA	89100	89100	NCA
	1985	0	0	0	157000	157000	NCA
	1990	0	0	0	157000	157000	0
	2000	0	0	0	157000	157000	0
250,000	1980	0	0	NCA	446000	446000	NCA
	1985	0	0	0	786000	786000	NCA
	1990	0	0	0	786000	786000	0
	2000	0	0	0	786000	786000	0

PARAMETER: ANNUAL COST OF ENERGY REQUIRED FOR CHARGING (5%) UNITS: 1980 Dollars

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2\ SO_4\ \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	57	57	NCA	157	157	NCA
	1985	73	73	73	200	200	NCA
	1990	93	93	93	256	256	93
	2000	153	153	153	416	416	153
100	1980	115	115	NCA	314	314	NCA
	1985	147	147	147	401	401	NCA
	1990	188	188	188	512	512	188
	2000	306	306	306	833	833	306
250	1980	288	288	NCA	786	786	NCA
	1985	368	368	368	1000	1000	NCA
	1990	470	470	470	1280	1280	470
	2000	766	766	766	2090	2090	766
500	1980	576	576	NCA	1570	1570	NCA
	1985	735	735	735	2000	2000	NCA
	1990	939	939	939	2560	2560	939
	2000	1530	1530	1530	4160	4160	1530
1000	1980	1150	1150	NCA	3140	3140	NCA
	1985	1470	1470	1470	4010	4010	NCA
	1990	1880	1880	1880	5110	5110	1880
	2000	3060	3060	3060	8330	8330	3060
5000	1980	5760	5760	NCA	15700	15700	NCA
	1985	7350	7350	7350	20000	20000	NCA
	1990	9390	9390	9390	25600	25600	9390
	2000	15300	15300	15300	41600	41600	15300
12500	1980	14400	14400	NCA	39300	39300	NCA
	1985	18400	18400	18400	50200	50200	NCA
	1990	23500	23500	23500	64000	64000	23500
	2000	38300	38300	38300	104000	104000	38300
25,000	1980	28800	28800	NCA	78600	78600	NCA
	1985	36800	36800	36800	100000	100000	NCA
	1990	47000	47000	47000	128000	128000	47000
	2000	76600	76600	76600	209000	209000	76600
37,500	1980	43200	43200	NCA	118000	118000	NCA
	1985	55200	55200	55200	151000	151000	NCA
	1990	70400	70400	70400	192000	192000	70400
	2000	115000	115000	115000	313000	313000	115000
50,000	1980	57600	57600	NCA	157000	157000	NCA
	1985	73500	73500	73500	200000	200000	NCA
	1990	93900	93900	93900	256000	256000	93900
	2000	153000	153000	153000	416000	416000	153000
250,000	1980	288000	288000	NCA	786000	786000	NCA
	1985	368000	368000	368000	1000000	1000000	NCA
	1990	470000	470000	470000	1280000	1280000	470000
	2000	766000	766000	766000	2090000	2090000	766000

PARAMETER: ANNUAL COST OF ENERGY REQUIRED FOR CHARGING (10%) UNITS: 1980 Dollars

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	115	115	NCA	187	187	NCA
	1985	92	92	92	253	253	NCA
	1990	149	149	149	407	407	149
	2000	387	387	387	1060	1060	387
100	1980	230	230	NCA	374	374	NCA
	1985	185	185	185	505	505	NCA
	1990	298	298	298	814	814	298
	2000	774	774	774	2110	2110	774
250	1980	576	576	NCA	937	937	NCA
	1985	464	464	464	1270	1270	NCA
	1990	747	747	747	2040	2040	747
	2000	1940	1940	1940	5290	5290	1940
500	1980	1150	1150	NCA	1870	1870	NCA
	1985	926	926	926	2530	2530	NCA
	1990	1490	1490	1490	4070	4070	1490
	2000	3870	3870	3870	10600	10600	3870
1000	1980	2300	2300	NCA	3740	3740	NCA
	1985	1850	1850	1850	5050	5050	NCA
	1990	2980	2980	2980	8140	8140	2980
	2000	7740	7740	7740	21100	21100	7740
5000	1980	11500	11500	NCA	18700	18700	NCA
	1985	9260	9260	9260	25300	25300	NCA
	1990	14900	14900	14900	40700	40700	14900
	2000	38700	38700	38700	106000	106000	38700
12500	1980	28800	28800	NCA	46800	46800	NCA
	1985	23200	23200	23200	63200	63200	NCA
	1990	37300	37300	37300	102000	102000	37300
	2000	96900	96900	96900	264000	264000	96900
25,000	1980	57600	57600	NCA	93700	93700	NCA
	1985	46400	46400	46400	127000	127000	NCA
	1990	74700	74700	74700	204000	204000	74700
	2000	194000	194000	194000	529000	529000	194000
37,500	1980	86400	86400	NCA	141000	141000	NCA
	1985	69600	69600	69600	190000	190000	NCA
	1990	112000	112000	112000	307000	307000	112000
	2000	291000	291000	291000	796000	796000	291000
50,000	1980	115000	115000	NCA	187000	187000	NCA
	1985	92600	92600	92600	253000	253000	NCA
	1990	149000	149000	149000	407000	407000	149000
	2000	387000	387000	387000	1060000	1060000	387000
250,000	1980	576000	576000	NCA	937000	937000	NCA
	1985	464000	464000	464000	1270000	1270000	NCA
	1990	747000	747000	747000	2040000	2040000	747000
	2000	1940000	1940000	1940000	5290000	5290000	1940000

PARAMETER: LIFE-CYCLE COST   UNITS: 1[illegible] Dollars/10^6 Btu

Thermal Energy Capacity, 10^3 Btu	Year	$CaCl\cdot 6\ H_2O$	$Na_2SO_4\cdot 10\ H_2O$	$NaS_2O_3\cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	1.37	2.93	NCA	2.81	3.63	NCA
	1985	1.23	2.63	2.69	4.32	4.51	NCA
	1990	1.23	2.63	2.69	4.32	4.51	2.66
	2000	1.23	2.63	2.69	4.32	4.51	2.66
100	1980	1.18	2.57	NCA	2.75	3.40	NCA
	1985	1.07	2.31	2.30	4.25	4.37	NCA
	1990	1.07	2.31	2.30	4.25	4.37	2.29
	2000	1.07	2.31	2.30	4.25	4.37	2.29
250	1980	0.96	2.11	NCA	2.67	3.14	NCA
	1985	0.86	1.90	1.84	4.18	4.21	NCA
	1990	0.86	1.90	1.84	4.18	4.21	1.82
	2000	0.86	1.90	1.84	4.18	4.21	1.82
500	1980	0.80	1.79	NCA	2.62	2.96	NCA
	1985	0.72	1.61	1.51	4.12	4.09	NCA
	1990	0.72	1.61	1.51	4.12	4.09	1.46
	2000	0.72	1.61	1.51	4.12	4.09	1.46
1000	1980	0.64	1.48	NCA	2.56	2.79	NCA
	1985	0.58	1.33	1.19	4.07	3.99	NCA
	1990	0.58	1.33	1.19	4.07	3.99	1.10
	2000	0.58	1.33	1.19	4.07	3.99	1.10
5000	1980	0.31	0.83	NCA	2.45	2.47	NCA
	1985	0.28	0.74	0.51	3.96	3.79	NCA
	1990	0.28	0.74	0.51	3.96	3.79	0.26
	2000	0.28	0.74	0.51	3.96	3.79	0.26
12500	1980	0.31	0.48	NCA	2.45	2.47	NCA
	1985	0.28	0.44	0.51	3.96	3.79	NCA
	1990	0.28	0.44	0.51	3.96	3.79	0.26
	2000	0.28	0.44	0.51	3.96	3.79	0.26
25,000	1980	0.31	0.48	NCA	2.45	2.47	NCA
	1985	0.28	0.43	0.51	3.96	3.79	NCA
	1990	0.28	0.43	0.51	3.96	3.79	0.26
	2000	0.28	0.43	0.51	3.96	3.79	0.26
37,500	1980	0.30	0.48	NCA	2.45	2.47	NCA
	1985	0.27	0.43	0.51	3.96	3.79	NCA
	1990	0.27	0.43	0.51	3.96	3.79	0.26
	2000	0.27	0.43	0.51	3.96	3.79	0.26
50,000	1980	0.30	0.48	NCA	2.45	2.47	NCA
	1985	0.27	0.43	0.51	3.96	3.79	NCA
	1990	0.27	0.43	0.51	3.96	3.79	0.26
	2000	0.27	0.43	0.51	3.96	3.79	0.26
250,000	1980	0.30	0.48	NCA	2.45	2.47	NCA
	1985	0.27	0.43	0.51	3.96	3.79	NCA
	1990	0.27	0.43	0.51	3.96	3.79	0.26
	2000	0.27	0.43	0.51	3.96	3.79	0.26

PARAMETER: LIFE-CYCLE COST (5%) UNITS: 1980 Dollars/10^6 Btu

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	3.28	4.84	NCA	6.04	6.85	NCA
	1985	3.67	5.07	5.13	7.46	7.65	NCA
	1990	4.34	5.75	5.80	9.32	9.51	5.77
	2000	6.30	7.70	7.76	14.62	14.81	7.72
100	1980	3.09	4.47	NCA	5.98	6.63	NCA
	1985	3.50	4.74	4.74	7.42	7.53	NCA
	1990	4.18	5.42	5.42	9.25	9.37	5.40
	2000	6.13	7.37	7.37	14.57	14.69	7.36
250	1980	2.86	4.01	NCA	5.90	6.36	NCA
	1985	3.30	4.33	4.27	7.31	7.35	NCA
	1990	3.97	5.00	4.95	9.17	9.20	4.93
	2000	5.93	6.96	6.91	14.53	14.56	6.88
500	1980	2.70	3.70	NCA	5.84	6.18	NCA
	1985	3.15	4.04	3.94	7.27	7.24	NCA
	1990	3.82	4.82	4.62	9.12	9.09	4.57
	2000	5.78	6.24	6.58	14.42	14.39	6.53
1000	1980	2.55	3.38	NCA	5.79	6.02	NCA
	1985	3.01	3.77	3.62	7.23	7.15	NCA
	1990	3.69	4.46	4.30	9.05	8.97	4.21
	2000	5.65	6.40	6.25	14.38	14.30	6.16
5000	1980	2.22	2.74	NCA	5.67	5.69	NCA
	1985	2.72	3.18	2.94	7.10	6.93	NCA
	1990	3.39	3.85	3.62	8.95	8.79	3.37
	2000	5.35	5.81	5.58	14.25	14.09	5.33
12500	1980	2.22	2.39	NCA	5.67	5.69	NCA
	1985	2.72	2.87	2.94	7.10	6.93	NCA
	1990	3.39	3.55	3.62	8.95	8.79	3.37
	2000	5.35	5.51	5.58	14.25	14.09	5.33
25,000	1980	2.21	2.39	NCA	5.67	5.69	NCA
	1985	2.71	2.87	2.94	7.09	6.92	NCA
	1990	3.39	3.54	3.62	8.94	8.78	3.37
	2000	5.34	5.50	5.58	14.25	14.10	5.33
37,500	1980	2.21	2.39	NCA	5.67	5.69	NCA
	1985	2.70	2.87	2.94	7.09	6.92	NCA
	1990	3.38	3.54	3.62	8.94	8.78	3.37
	2000	5.34	5.50	5.58	14.25	14.10	5.33
50,000	1980	2.21	2.39	NCA	5.67	5.69	NCA
	1985	2.70	2.87	2.94	7.09	6.92	NCA
	1990	3.38	3.54	3.62	8.94	8.78	3.37
	2000	5.34	5.50	5.58	14.25	14.10	5.33
250,000	1980	2.20	2.39	NCA	6.57	5.69	NCA
	1985	2.70	2.87	2.94	7.09	6.92	NCA
	1990	3.38	3.54	3.62	8.94	8.78	3.37
	2000	5.33	5.50	5.58	14.25	14.10	5.33

PARAMETER: LIFE-CYCLE COST (10%) UNITS: 1980 Dollars/10^6 Btu

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	7.36	8.92	NCA	10.58	11.39	NCA
	1985	6.06	7.46	7.78	14.02	14.21	NCA
	1990	8.99	10.40	10.45	22.04	22.23	10.42
	2000	21.39	22.79	22.85	56.05	56.24	22.81
100	1980	7.17	8.22	NCA	10.52	11.17	NCA
	1985	5.88	7.13	7.12	13.93	14.04	NCA
	1990	8.83	10.07	10.06	21.97	22.09	10.05
	2000	21.22	22.46	22.46	55.72	55.84	22.44
250	1980	6.95	8.10	NCA	10.45	10.91	NCA
	1985	5.69	6.72	6.67	13.91	13.94	NCA
	1990	8.64	9.67	9.61	21.93	21.96	9.59
	2000	21.05	22.08	22.03	55.74	55.78	22.00
500	1980	6.79	7.78	NCA	10.38	10.72	NCA
	1985	5.54	6.43	6.33	13.82	13.79	NCA
	1990	8.48	9.37	9.27	21.84	21.81	9.22
	2000	20.87	21.77	21.67	55.85	55.82	21.61
1000	1980	6.63	7.47	NCA	10.33	10.56	NCA
	1985	5.40	6.15	6.01	13.74	13.94	NCA
	1990	8.34	9.09	8.95	21.79	21.89	8.86
	2000	20.73	21.49	21.34	55.54	55.73	21.25
5000	1980	6.30	6.82	NCA	10.21	10.23	NCA
	1985	5.11	5.57	5.33	13.65	13.49	NCA
	1990	8.04	8.50	8.27	21.76	21.51	8.02
	2000	20.44	20.90	20.67	55.68	55.52	20.42
12500	1980	6.31	6.48	NCA	10.22	10.24	NCA
	1985	5.11	5.27	5.34	13.64	13.47	NCA
	1990	8.05	8.21	8.28	21.72	21.56	8.03
	2000	20.47	20.62	20.70	55.47	55.31	20.45
25,000	1980	6.30	6.48	NCA	10.22	10.24	NCA
	1985	5.10	5.26	5.34	13.69	13.52	NCA
	1990	8.05	8.21	8.28	21.70	21.53	8.03
	2000	20.46	20.62	20.70	55.52	55.35	20.45
37,500	1980	6.30	6.48	NCA	10.22	10.24	NCA
	1985	5.10	5.26	5.34	13.69	13.52	NCA
	1990	8.05	8.21	8.28	21.70	21.53	8.03
	2000	20.46	20.62	20.70	55.52	55.35	20.45
50,000	1980	6.30	6.48	NCA	10.22	10.24	NCA
	1985	5.10	5.26	5.34	13.69	13.53	NCA
	1990	8.05	8.21	8.28	21.70	21.54	8.03
	2000	20.46	20.62	20.70	55.52	55.36	20.45
250,000	1980	6.29	6.48	NCA	10.22	10.24	NCA
	1985	5.09	5.26	5.34	13.69	13.53	NCA
	1990	8.04	8.21	8.28	21.70	21.54	8.03
	2000	20.45	20.62	20.70	55.52	55.36	20.45

PARAMETER: CHARGE TIME UNITS: Minutes

Thermal Energy Capacity, 10^3Btu	Year	$CaCl\cdot 6\ H_2O$	$Na_2\ SO_4\ \cdot 10\ H_2O$	$NaS_2O_3\cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
100	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
250	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
500	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
1000	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
5000	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
12500	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
25,000	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
37,500	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
50,000	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780
250,000	1980	510	390	NCA	480	480	NCA
	1985	510	390	390	480	480	NCA
	1990	510	390	390	480	480	780
	2000	510	390	390	480	480	780

PARAMETER: DISCHARGE TIME UNITS: Minutes

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
100	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
250	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
500	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
1000	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
5000	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
12500	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
25,000	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
37,500	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
50,000	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360
250,000	1980	930	420	NCA	600	840	NCA
	1985	930	420	420	600	840	NCA
	1990	930	420	420	600	840	360
	2000	930	420	420	600	840	360

PARAMETER: VOLUME UNITS: Cubic Feet

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2\ SO_4\ \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	12	14	NCA	8	5	NCA
	1985	12	14	7	8	5	NCA
	1990	12	14	7	8	5	10
	2000	12	14	7	8	5	10
100	1980	24	26	NCA	16	10	NCA
	1985	24	26	13	16	10	NCA
	1990	24	26	13	16	10	20
	2000	24	26	13	16	10	20
250	1980	59	60	NCA	40	22.5	NCA
	1985	59	60	33	40	22.5	NCA
	1990	59	60	33	40	22.5	50
	2000	59	60	33	40	22.5	50
500	1980	120	110	NCA	80	45	NCA
	1985	120	110	65	80	45	NCA
	1990	120	110	65	80	45	99
	2000	120	110	65	80	45	99
1000	1980	230	210	NCA	160	90	NCA
	1985	230	210	130	160	90	NCA
	1990	230	210	130	160	90	200
	2000	230	210	130	160	90	200
5000	1980	1200	920	NCA	800	400	NCA
	1985	1200	920	650	800	400	NCA
	1990	1200	920	650	800	400	990
	2000	1200	920	650	800	400	990
12500	1980	2900	2100	NCA	2000	860	NCA
	1985	2900	2100	1600	2000	860	NCA
	1990	2900	2100	1600	2000	860	2500
	2000	2900	2100	1600	2000	860	2500
25,000	1980	5700	4000	NCA	4000	1650	NCA
	1985	5700	4000	3300	4000	1650	NCA
	1990	5700	4000	3300	4000	1650	5000
	2000	5700	4000	3300	4000	1650	5000
37,500	1980	8500	5700	NCA	6000	2400	NCA
	1985	8500	5700	4900	6000	2400	NCA
	1990	8500	5700	4900	6000	2400	7400
	2000	8500	5700	4900	6000	2400	7400
50,000	1980	11000	7400	NCA	8000	3200	NCA
	1985	11000	7400	6500	8000	3200	NCA
	1990	11000	7400	6500	8000	3200	9900
	2000	11000	7400	6500	8000	3200	9900
250,000	1980	56000	31000	NCA	40000	14000	NCA
	1985	56000	31000	33000	40000	14000	NCA
	1990	56000	31000	33000	40000	14000	50000
	2000	56000	31000	33000	40000	14000	50000

PARAMETER: AREA UNITS: Square Feet

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	1.9	2.8	NCA	2.4	0.9	NCA
	1985	1.9	2.8	1.1	2.4	0.9	NCA
	1990	1.9	2.8	1.1	2.4	0.9	1.3
	2000	1.9	2.8	1.1	2.4	0.9	1.3
100	1980	3.9	5.6	NCA	4.8	1.9	NCA
	1985	3.9	5.6	2.1	4.8	1.9	NCA
	1990	3.9	5.6	2.1	4.8	1.9	2.5
	2000	3.9	5.6	2.1	4.8	1.9	2.5
250	1980	9.6	14	NCA	12	4.7	NCA
	1985	9.6	14	5.3	12	4.7	NCA
	1990	9.6	14	5.3	12	4.7	6.4
	2000	9.6	14	5.3	12	4.7	6.4
500	1980	19	28	NCA	24	9.4	NCA
	1985	19	28	11	24	9.4	NCA
	1990	19	28	11	24	9.4	13
	2000	19	28	11	24	9.4	13
1000	1980	39	56	NCA	48	19	NCA
	1985	39	56	21	48	19	NCA
	1990	39	56	21	48	19	25
	2000	39	56	21	48	19	25
5000	1980	190	280	NCA	240	94	NCA
	1985	190	280	110	240	94	NCA
	1990	190	280	110	240	94	130
	2000	190	280	110	240	94	130
12500	1980	480	700	NCA	600	230	NCA
	1985	480	700	260	600	230	NCA
	1990	480	700	260	600	230	320
	2000	480	700	260	600	230	320
25,000	1980	960	1400	NCA	1200	470	NCA
	1985	960	1400	530	1200	470	NCA
	1990	960	1400	530	1200	470	640
	2000	960	1400	530	1200	470	640
37,500	1980	1400	2100	NCA	1800	700	NCA
	1985	1400	2100	790	1800	700	NCA
	1990	1400	2100	790	1800	700	950
	2000	1400	2100	790	1800	700	950
50,000	1980	1900	2800	NCA	2400	940	NCA
	1985	1900	2800	1100	2400	940	NCA
	1990	1900	2800	1100	2400	940	1300
	2000	1900	2800	1100	2400	940	1300
250,000	1980	9600	14000	NCA	12000	4700	NCA
	1985	9600	14000	5300	12000	4700	NCA
	1990	9600	14000	5300	12000	4700	6400
	2000	9600	14000	5300	12000	4700	6400

PARAMETER: WEIGHT UNITS: POUNDS

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2\ SO_4\ \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	870	840	NCA	230	280	NCA
	1985	870	840	580	230	280	NCA
	1990	870	840	580	230	280	610
	2000	870	840	580	230	280	610
100	1980	1600	1600	NCA	450	560	NCA
	1985	1600	1600	1200	450	560	NCA
	1990	1600	1600	1200	450	560	1200
	2000	1600	1600	1200	450	560	1200
250	1980	3400	3600	NCA	1100	1400	NCA
	1985	3400	3600	2900	1100	1400	NCA
	1990	3400	3600	2900	1100	1400	3000
	2000	3400	3600	2900	1100	1400	3000
500	1980	6100	6700	NCA	2300	2700	NCA
	1985	6100	6700	5800	2300	2700	NCA
	1990	6100	6700	5800	2300	2700	6100
	2000	6100	6700	5800	2300	2700	6100
1000	1980	11000	12000	NCA	4500	5400	NCA
	1985	11000	12000	12000	4500	5400	NCA
	1990	11000	12000	12000	4500	5400	12000
	2000	11000	12000	12000	4500	5400	12000
5000	1980	39000	52000	NCA	23000	27000	NCA
	1985	39000	52000	58000	23000	27000	NCA
	1990	39000	52000	58000	23000	27000	61000
	2000	39000	52000	58000	23000	27000	61000
12500	1980	77000	120000	NCA	57000	67000	NCA
	1985	77000	120000	140000	57000	67000	NCA
	1990	77000	120000	140000	57000	67000	150000
	2000	77000	120000	140000	57000	67000	150000
25,000	1980	130000	130000	NCA	110000	130000	NCA
	1985	130000	130000	290000	110000	130000	NCA
	1990	130000	130000	290000	110000	130000	300000
	2000	130000	130000	290000	110000	130000	300000
37,500	1980	160000	300000	NCA	170000	190000	NCA
	1985	160000	300000	430000	170000	190000	NCA
	1990	160000	300000	430000	170000	190000	450000
	2000	160000	300000	430000	170000	190000	450000
50,000	1980	200000	390000	NCA	230000	260000	NCA
	1985	200000	390000	580000	230000	260000	NCA
	1990	200000	390000	580000	230000	260000	610000
	2000	200000	390000	580000	230000	260000	610000
250,000	1980	400000	1600000	NCA	1100000	1200000	NCA
	1985	400000	1600000	2900000	1100000	1200000	NCA
	1990	400000	1600000	2900000	1100000	1200000	3000000
	2000	400000	1600000	2900000	1100000	1200000	3000000

PARAMETER: RAW MATERIALS UNITS: Ordinal; 1-5

Thermal Energy Capacity, 10^3Btu	Year	$CaCl\cdot 6\ H_2O$	$Na_2SO_4\cdot 10\ H_2O$	$NaS_2O_3\cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
100	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
250	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
500	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
1000	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
5000	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
12500	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
25,000	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
37,500	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
50,000	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3
250,000	1980	5	5	NCA	3	5	NCA
	1985	5	5	3	3	5	NCA
	1990	5	5	3	3	5	3
	2000	5	5	3	3	5	3

PARAMETER: OPERATIONAL CONSTRAINTS UNITS: Ordinal; 1-5

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	3	3	NCA	3	3	NCA
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	3
	2000	3	3	4	3	3	3
100	1980	3	3	NCA	3	3	NCA
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	3
	2000	3	3	4	3	3	3
250	1980	3	3	NCA	3	3	NCA
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	NCA
500	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
1000	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
5000	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
12500	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
25,000	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
37,500	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
50,000	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3
250,000	1980	3	3	NCA	3	3	3
	1985	3	3	4	3	3	NCA
	1990	3	3	4	3	3	NCA
	2000	3	3	4	3	3	3

PARAMETER: RELIABILITY UNITS: Ordinal; 1-5

Thermal Energy Capacity, 10^3Btu	Year	$CaCl \cdot 6\ H_2O$	$Na_2SO_4 \cdot 10\ H_2O$	$NaS_2O_3 \cdot 5\ H_2O$	Olivine Ceramic	Magnisite Ceramic	Form-Stable Polyethylene
50	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
100	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
250	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
500	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
1000	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
5000	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
12500	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
25,000	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
37,500	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
50,000	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4
250,000	1980	4	4	NCA	4	4	NCA
	1985	4	4	3	4	4	NCA
	1990	4	4	3	4	4	4
	2000	4	4	3	4	4	4

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2000	0	0	0	786000	786000	0

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